



MAHARISHI EUROPEAN RESEARCH UNIVERSITY
Seelisberg, Switzerland

The Science of Creative Intelligence
offers

FULFILMENT IN EDUCATION

SELF-REALIZATION FOUND IN THE
SIMPLEST FORM OF AWARENESS —
THE FIELD OF ALL POSSIBILITIES

presented at

THE SEVENTH WORLD CONGRESS
International Association for the
Advancement of Educational Research

GENT, BELGIUM 25–29 JULY 1977

1977 The Year of Ideal Society
Third Year of the Age of Enlightenment



HIS HOLINESS MAHARISHI MAHESH YOGI
Founder of the Science of Creative Intelligence
and Maharishi European Research University

Knowledge is for action, action for achievement, achievement for fulfilment. Thus, knowledge is directly concerned with fulfilment. For complete fulfilment, complete knowledge is necessary. Complete knowledge should mean total knowledge of the object of inquiry and total knowledge of the subject; total knowledge of both the known and the knower. When the knower does not know himself, then the basis of knowledge is missing.

The Science of Creative Intelligence, by opening one's awareness to the infinite, unbounded value of intelligence, broadens the awareness and makes it permanently unbounded, so that no area of life remains foreign. This is the ground of all knowledge—complete knowledge—and therefore is the basis of complete fulfilment.

—*Maharishi*

A Transcendental Meditation Publication
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Maharishi European Research University Press Publication Number G1339
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FULFILMENT IN EDUCATION
**SELF-REALIZATION FOUND IN THE
SIMPLEST FORM OF AWARENESS—
THE FIELD OF ALL POSSIBILITIES**

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The basis of education is consciousness, knowledge of the knower. Without the knowledge of consciousness, the knowledge of the knower, there is no basis to knowledge. So far in education this knowledge has been absent. Education was based on the details of knowledge itself. This is obvious from the common understanding and experience that life is a struggle.

Self-realization means experience of the full and unbounded nature of man's own consciousness.

The first fundamental of education is to provide the opportunity for every man to realize the full potential of his own consciousness, since only by developing his consciousness to the full can man ever attain self-realization. Self-realization dawns with the inner experience of the most settled state of awareness—the state of least excitation of consciousness—which is the inner self of every man; and self-realization becomes a permanent reality when the state of least excitation is fully stabilized in the awareness.

The fundamental tenet of education at Maharishi European Research University is: *Knowledge is Structured in Consciousness*. Knowledge is not a property of the information given in a classroom or contained in a textbook; it is a fundamental quality of consciousness itself. The state of least excitation of consciousness, the most settled, unbounded, and self-sufficient state of awareness, is the field of pure knowledge. From another viewpoint, the aphorism 'Knowledge is Structured in Consciousness' expresses the principle that knowledge will be complete only when consciousness is clear and expanded; clarity of mind is primary as far as gaining knowledge is concerned.

A fully educated man is one who not only has a breadth and depth of understanding of the various academic disciplines, but who also, by virtue of his fully expanded consciousness, is a master of his own destiny; a fulfilled individual who feels at home in every undertaking and every field of life. A systematic procedure to develop the full potential of consciousness is the only guarantee that a man will become fully educated, since no amount of mere study will achieve the same results if the mind is not clear, the physiology not completely healthy, and mind and body not perfectly integrated. No

system of education can regard itself as complete unless it includes such a procedure.

The Science of Creative Intelligence, with its practical aspect, the Transcendental Meditation technique, has proved itself to be just such an effective procedure; it provides a simple effortless mental practice—the Transcendental Meditation technique—which systematically and progressively unfolds the full potential of consciousness and enables this full potential to be expressed in every channel of life, it provides a complete understanding of how this very process takes place, and how the knowledge of human consciousness and its full development is related to every field of knowledge.

The Transcendental Meditation technique has now been adopted by over one and a half million people from all over the world, and the Science of Creative Intelligence has been used many times in educational institutions in different parts of the world, to great effect. A uniform and effective teaching procedure exists and is available in 1,500 teaching centres around the world by virtue of the 13,000 trained Teachers of the Science of Creative Intelligence.

Well over 200 fully documented research studies have been carried out in various universities and research institutions, overwhelmingly demonstrating the efficacy of the Transcendental Meditation programme in developing the full potential of the individual. Many of these studies cover academic parameters; although of course any measure of the growth of self-realization and the actualization of full potential is of direct relevance to anyone seriously concerned with education.

More recently, Maharishi Mahesh Yogi, the founder of the Transcendental Meditation programme and of Maharishi International University and Maharishi European Research University, has developed auxiliary procedures in the Transcendental Meditation programme, known as the TM-sidhi practices. These procedures are each designed to bring one particular aspect of the functioning of the mind, and of mind-body co-ordination, to its full blossoming, and as a complete set, they greatly accelerate the growth of consciousness already experienced as a result of the Transcendental Meditation technique. The TM-sidhi practices have already been learnt by over 1,000 Teachers of the Transcendental Meditation programme in six-month residential courses, and as a basis of the great success of these courses, the TM-sidhi practices are now being offered to any person with a certain minimum amount of experience with the Transcendental Meditation technique. Initial research studies on the TM-sidhi procedures have demonstrated that within a relatively short period of time, performance, as measured by a wide range of variables, improves greatly—even beyond the level thought possible—and a very complete state of inner fulfilment and outer achievement is gained by the individual. For a long time it has been thought that the process of gaining self-realization was fraught with great difficulty and required long practice. Now the Transcendental Meditation programme and the TM-sidhi techniques amply demonstrate that, far from being difficult, self-realization is to be found in man's simplest form of awareness.

The Transcendental Meditation programme thus offers a simple, effective, and complete formula to bring fulfilment to the goals of any educational system and to ensure that the first fundamental of education—the full development of consciousness or self-realization—can be achieved by any individual in any culture.

THE TRANSCENDENTAL MEDITATION TECHNIQUE AS A PROCEDURE TO GAIN SELF-REALIZATION

The Transcendental Meditation technique is a simple mental procedure that ensures that any individual can gain the state of enlightenment—full self-realization. During the Transcendental Meditation technique, the awareness experiences progressively quieter or lesser excited states of the thinking process until, transcending the finest or quietest level of thought, a state of pure awareness is experienced. This is the state of least excitation of consciousness and is the source of all the excitations or thoughts experienced by the mind. The state of least excitation of consciousness is a state of extreme clarity of mind and of maximum alertness. It is experienced as a state of unboundedness, in which the mind is free from the boundaries or limitations of space, time, and particular experience. It is purely an experience of 'the Self', free from any outside influences, and is therefore the first experience of self-realization.

The Transcendental Meditation technique is practised for two 20-minute periods each day—once in the morning and once in the evening. The regular experience of the state of least excitation of consciousness results in a progressive infusion of the qualities of this state into the thinking mind, culminating in the development of a level of consciousness where the 'Self' is a permanent reality. This is the state of enlightenment or cosmic consciousness in which the Self—the state of least excitation of consciousness—is a permanent and stable witness supporting all phases of activity, and in which the mind is fully developed, health is perfect, behaviour is evolutionary, and all aspects of life are fulfilling.

At Maharishi European Research University there has been a multi-branched investigation of the state of least excitation of consciousness and of the development of consciousness that arises from regular practice of the Transcendental Meditation technique. From the standpoint of modern science, many experimental investigations have been made to determine the physiological and psychological characteristics of this state of awareness. Also, from a theoretical viewpoint, a detailed comparison has been made between the qualities of the state of least excitation of consciousness and areas of fundamental knowledge from scientific theories, in particular the vacuum state of quantum field theory.

A detailed catalogue of experiences in advanced courses in the Transcendental Meditation programme at Maharishi European Research University has been made, and finally, the ancient Vedic literature, in which the process of the Transcendental Meditation technique and the development of higher states of consciousness are described in detail, has been examined in relationship to the experiences, the experimental findings, and the theoretical discoveries.

Of great value has been the delineation of a set of major qualities of the state of least excitation of consciousness. This analysis has been made possible by the regularity and systematic nature of the experience of this state of awareness during the Transcendental Meditation technique and by the existence of modern scientific theories penetrating enough to provide descriptions of the ultimate nature of objective reality. The vacuum state of quantum field theory has been very successfully compared to the state of least

excitation of consciousness. The vacuum state, generalized to include all physical fields, is the state of least excitation of all matter and energy in the universe. Similar to the state of least excitation of consciousness, it is *unmanifest* and a field of *perfect orderliness*.

The vacuum state is a *field of all possibilities*: any form of manifest existence can be created from it given the appropriate initial conditions. Within its unmanifest structure is contained the rules for all changing phenomena in the universe; therefore although *unchanging* in its own nature it is the *source of all change*, the *home of all the laws of nature*, and the *home of all knowledge*. From the mathematical definition of the vacuum state it can also be seen to be *unbounded*, *self-perpetuating*, and a *field of infinite correlation*.

These ten characteristics conveniently summarize the attributes of pure awareness, the state of least excitation of consciousness, as it is directly experienced during the Transcendental Meditation technique. This analysis of its qualities is further substantiated by the research on the Transcendental Meditation programme, which has uncovered the existence of these qualities either during the experience of the Transcendental Meditation technique itself or in the activity following it. For clarity these ten qualities of the state of least excitation of consciousness are listed below:

- | | |
|-------------------------|----------------------------------|
| ● Perfect orderliness | ● Home of all the laws of nature |
| ● Unmanifest nature | ● Unboundedness |
| ● Non-changing | ● Self-perpetuating |
| ● Source of all change | ● Infinite correlation |
| ● Home of all knowledge | ● Field of all possibilities |

Having defined the main qualities of the state of least excitation of consciousness, an understanding of the benefits of the Transcendental Meditation technique is facilitated. A review of the most prominent of the research results on the Transcendental Meditation programme is given in a later section, but at this stage it will be of value to point out some of the major findings.

During the Transcendental Meditation technique itself, the entire physiology gains a very deep state of rest. Oxygen consumption, breath rate and heart rate decrease markedly, but all in a natural manner without any manipulation, resulting in a level of rest deeper than that gained during sleep. Simultaneously, skin resistance measurements indicate a stable and profound level of relaxation. However, this state is one of high alertness, and electroencephalographic recordings of the electrical activity of the brain show unique patterns of extremely high coherence, or orderliness, reflecting the inner experience of unbounded wakefulness and integration. The orderly patterns of brain wave activity indicate perfect transfer of information from one part of the brain to another, and account for the greatly enhanced orderliness of thinking and integration of the personality following the practice.

Various biochemical changes have been seen during the practice of the Transcendental Meditation technique, such as reduced blood lactate, reduced cortisol, and increased prolactin. These results indicate decreased stress and increased alertness.

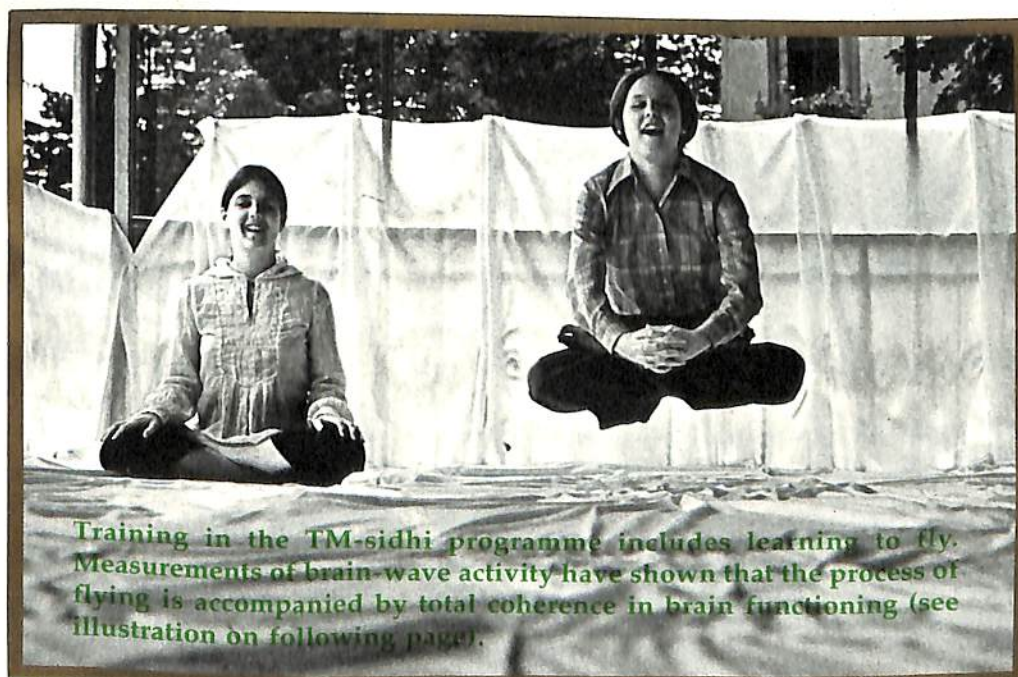
Following the regular practice of the Transcendental Meditation technique, a whole spectrum of developments are seen. These include stability and efficiency of

physiological functioning, increased resistance to stress, improved health, faster reactions, superior mind-body co-ordination, sharper perceptions, development of personality, decreased anxiety, improved social behaviour and moral reasoning, and a decrease in the use of alcohol, tobacco, and non-prescription drugs.

Many of these results are of great benefit to education, as will be outlined in a later section. However, in addition to these findings, a number of research studies have focused specifically on the direct academic and educational benefits of the Transcendental Meditation programme. Results found include: increased creativity, improved learning ability, increased orderliness of thinking (improved memory and problem-solving ability), improved academic performance, increased intelligence growth rate, and increased self-esteem, individuality, energy level, and tolerance in high school students. Wherever the Transcendental Meditation technique has been used in a classroom setting, very great improvements have been seen in the synergy, harmony, and performance of the group.

From this brief survey of the major results of the Transcendental Meditation programme, and of the characteristics of the systematic growth of self-realization provided by the programme, its importance for education cannot be over emphasized, and all educators are strongly urged to implement the Transcendental Meditation programme in their curricula.

THE TM-SIDHI PROGRAMME AS A MEANS TO DEVELOP THE FIELD OF ALL POSSIBILITIES IN EVERY MAN



The TM-sidhi programme consists of various advanced techniques in the Transcendental Meditation programme devised by Maharishi from the Yoga Sutras of Patanjali.

The original Sanskrit meaning of 'sidhi' is 'perfection', and each of the TM-sidhi procedures is a technique for producing perfection in one specific channel of the functioning of the mind and/or mind-body co-ordination. Thus there are sidhi procedures to enhance the abilities of all the senses and of the organs of action, sidhis that develop internal abilities and emotional virtues, as well as sidhis pertaining to higher creative abilities such as being able to fly, or know the past and future. Maharishi Mahesh Yogi has emphasized in his interpretation of the sidhis that their primary value is to develop the state of enlightenment — self-realization or perfection.

Patanjali describes the inner transformation of awareness as a means of establishing permanent wholeness of awareness — *kaivalya* — singularity. Flying is just the outer expression of this inner development. The TM-sidhi procedures have been taught by Maharishi to over 1,000 teachers of the Transcendental Meditation technique, and are now being offered in short residence courses to individuals who are not necessarily teachers of the Transcendental Meditation technique but who have been practising the technique for a certain minimum time.

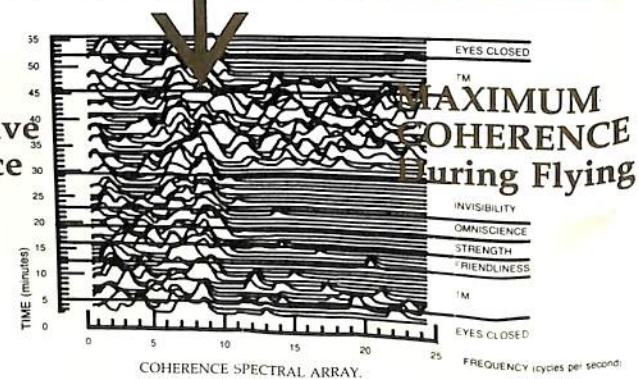
During the last year, considerable research has been conducted at Maharishi European Research University on the TM-sidhi techniques. The findings so far indicate that the integration and coherence of brain functioning developed through the Transcendental

OPTIMIZING BRAIN FUNCTIONING THROUGH THE TRANS



OPTIMUM BRAIN FUNCTIONING, as indicated by maximum coherence (orderliness) in brain wave activity during the TM-Sidhi practice, creates the perfect conditions for the frictionless flow of awareness towards the fulfilment of its desire. The principle of least action, which governs all activity in nature and uses the skill of nature to quietly accomplish everything, is available in its optimum value when brain wave coherence is maximum and awareness is in its simplest state.

The TM-Sidhi programme is a breakthrough in the development of human potential. Enlivening and activating



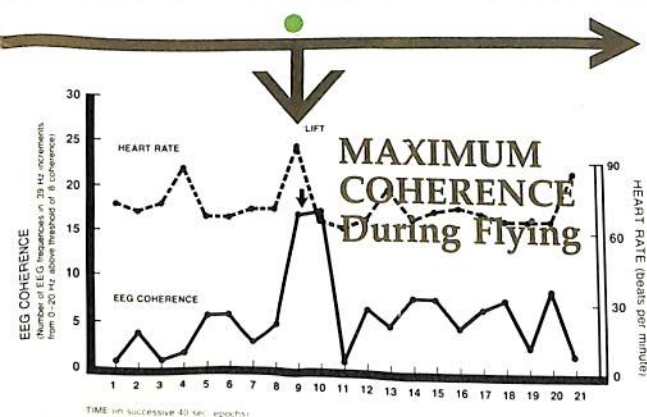
transcendental consciousness, and developing the habit to project thought and action from this simplest form of awareness, it makes thought and action most natural and therefore spontaneously evolutionary, and opens the field of all possibilities for the fulfilment of every desire. Here is the scientifically validated formula for enlightenment — life in fulfilment, free from suffering and problems. It has arisen with the dawn of the Age of Enlightenment, which was inaugurated by Maharishi on 12 January 1975.

To hasten the joy of the full sunshine of the Age of Enlightenment for all mankind, Maharishi has established the

Meditation technique is enhanced still further to produce a state of optimum brain functioning even during considerable activity. This optimization of the functioning of the brain has been confirmed in other results involving measurements of creativity, intelligence, field independence (the ability to maintain a stable internal frame of reference), behavioural flexibility, and hearing ability. In a number of cases the testing procedures had to be adapted as the individuals were performing more effectively than the level the tests were designed to measure (details are provided in a later section). The TM-sidhi procedures thus provide an extremely effective, systematic and simple method to enhance the development accomplished by the Transcendental Meditation technique. They allow the state of integration or self-realization experienced during the Transcendental Meditation technique as the state of least excitation of consciousness to be experienced and expressed in every phase of dynamic activity.

For many years Maharishi has been emphasizing that the Transcendental Meditation technique opens the field of all possibilities to the awareness. It has only been with the advent of the TM-sidhis that the full implications of the expression 'all possibilities' have been realized. While the Transcendental Meditation technique is a procedure for opening the field of all possibilities to the awareness, the TM-sidhi procedures enliven the field of all possibilities, so that any desired result can be achieved.

TRANSCENDENTAL MEDITATION PROGRAMME AND TM-SIDHIS



High EEG coherence and heart rate during experience of levitation.

Maximum coherence in brain waves accomplishes the specific sidhi. In the case of the flying sidhi, the body lifts up at the point of maximum coherence.

World Government of the Age of Enlightenment with sovereignty in the domain of consciousness and 1,500 Capitals of the Age of Enlightenment throughout the world.

With the world-wide distribution of this knowledge and experience, world consciousness has already started to rise, enriching the quality of life everywhere. With the TM-Sidhi programme enlivening the state of infinite correlation at the basis of all life, a global transformation is taking place, an ideal society is being born.

The TM-Sidhi programme has come to us in this scientific

age as the fulfilment of pure knowledge. Here both ancient Veda and modern science find their ultimate achievement in opening infinite possibilities to human life.

Every individual practising the TM-Sidhi programme today is pioneering the Age of Enlightenment from the deepest, most silent level of his consciousness, for himself, for his family, his nation, and his world — for peace in the family of nations.

Jai Guru Dev.

THE SCIENCE OF CREATIVE INTELLIGENCE AS THE TRUE BASIS FOR THE STUDY OF ALL KNOWLEDGE

The need for a single, unifying understanding of nature that would comprehend all the principles and laws found in every academic discipline has been the pressing need of the time. In the past thirty years, many attempts to provide such a unified basis of science have been made: General System Theory, Information Theory, Cybernetics, game theory, decision theory, and many others. All seek to define the processes of growth and the value of wholeness and order that is found everywhere in nature. All have failed. And the reason for failure has been simply that none of these approaches provides experience. Each one is only an intellectual construct. None attempts to bridge the gap between the subject or knower, and the object of knowledge. None succeeds in providing a means for the scientist to be both a part of his field and an objective observer to it.

The Science of Creative Intelligence, however, does provide the unifying insight that synthesizes all elements in the field with the knower. This insight is gained through the direct experience of pure consciousness, the simplest state of awareness, as the common source of the entire range of creativity in nature. By gaining both direct experience and intellectual knowledge of the growth of consciousness, the student appreciates the relations between all disciplines, and their common basis in fundamental principles of growth and order found in their pure form in his own awareness. In addition he also gains the increased mental capacity necessary to grasp the infinite correlation between all areas of his knowledge and experience.

So far no approach to interdisciplinary study has remotely approached this achievement, simply because direct experience of higher states of consciousness was not given. Only when the physiological functioning of the brain itself is optimized through the development of total coherence, can the direct experience of the wholeness of knowledge be obtained. Yet when once this is achieved, the fruit of all knowledge is available: 'Know that by which everything may be known.'

THE TRANSCENDENTAL MEDITATION PROGRAMME AS A SOLUTION TO ALL CURRENT PROBLEMS OF EDUCATION

The Majority of Scholars Do Not Enter Higher Education

The majority of pupils in secondary education do not qualify for or are not inspired to enter higher education. This leaves individuals incompletely educated and prevents the full development of national resources. As a result, the full potential of society is never harnessed. This situation arises because the present structure of secondary education does not adequately develop the learning ability of the pupil, nor does it inspire in him a deep love of knowledge.

In recent years, however, the Transcendental Meditation technique has been successfully used in secondary schools as a systematic means for the development of consciousness of the pupil. Where the Transcendental Meditation technique has been introduced into the field of education a marked increase in academic performance, creativity, and learning ability has been found. In addition, the pupil or student becomes more highly motivated to seek knowledge and therefore to enter higher levels of education.

Maharishi International University (MIU)*, in conjunction with Maharishi European Research University, has developed a three-year secondary school curriculum, 'Fullness of Life', which systematically accounts for the growth of consciousness that is being experienced directly by the pupil through the Transcendental Meditation programme. In the development of this curriculum, great importance was attached to the provision of a fundamental understanding of the link between the individual and the academic subjects that he is studying. This link is created by means of the principles of the Science of Creative Intelligence, the theoretical field of knowledge that has as its practical aspect the Transcendental Meditation technique. These principles are explored with reference to (a) the lives of great men, (b) the pupil's own personal experience, and (c) principles and research taken from various scientific disciplines. In the section entitled 'Lack of Fulfilment in Education' there will be further explanation of how the Science of Creative Intelligence and the Transcendental Meditation programme help to inspire a love of learning and a desire to continue education by making the educational experience fulfilling.

The Problem of Student 'Drop-Out'

Many pupils and students leave school or college without completing their courses of study. In many cases such attrition arises from psychological problems in the students themselves or is the result of inadequate preparation of the individual for higher education. More and more, the educational system is considered responsible for developing the student's full use of his mental potential, for freeing him from psychological problems that prevent his potential being fully expressed, and for preparing him for the next level of educational experience.

These responsibilities can be met by means of the introduction of the Transcendental Meditation programme and the Science of Creative Intelligence into education. The development of consciousness provided by the Transcendental Meditation programme has been found to result automatically in the development of a well-adjusted psychological condition. Stress and anxiety are found to be progressively reduced; the individual becomes more stable and mature, developing the holistic pattern of positive characteristics defined by psychologists as self-actualization.

The development of mental abilities provided by the Transcendental Meditation programme has the additional benefit of enabling the student to cope more effectively with the academic pressures of education. The number of students who drop out can be further reduced if the education system can be made fulfilling. How this can be done will be discussed at greater length in the next section.

* Maharishi International University, equipped with a fully functioning campus in Fairfield, Iowa, was founded in 1971 to provide a complete educational experience based on the Science of Creative Intelligence and the development of consciousness, and to provide a model of an educational institution that develops every aspect of individual life, thus preparing the individual to function as an ideal citizen.

Lack of Fulfilment in Education

Lack of relevance of the educational material to the student's life contributes greatly to the problem of students and scholars finding the educational experience inherently unfulfilling. The student is exposed to an ever-increasing range and quantity of information, and he does not generally experience growing fulfilment as this information accumulates. On the contrary, the rapidly expanding quantity of facts and figures often puts a considerable and sometimes intolerable pressure on him.

A frequent experience is at the time of leaving education, even at the age of twenty-five, the individual does not feel fulfilled. Various remedies for this situation have been attempted, such as the provision of part-time education for adults. But it must be emphasized that the knowledge that failed to provide fulfilment in early years is unlikely to prove more fruitful in later years. Educators should not take refuge in prolonging failure but should provide education that brings fulfilment to the individual in the first twenty-five years of life — enabling the rest of life to be spent enjoying the fruit of all the knowledge. Such an educational system is not an impossible ideal, as is shown by experience using the MIU/MERU educational methodology, which transforms higher education into an intrinsically fulfilling experience.

The resolution of the problem of lack of fulfilment in higher education, by means of the introduction of the Science of Creative Intelligence and the Transcendental Meditation programme, occurs in a number of ways.

By providing the individual with an inner experience of the essential nature and structure of consciousness, the practice of the Transcendental Meditation technique gives the student knowledge of his own nature. Once the knower knows fully what he is, education has a firm basis and becomes fulfilling. Anchored in the knowledge and experience of his own inner consciousness, the student is not threatened by new material and can relate to it and assimilate it with greater ease and enjoyment. Furthermore, in the Science of Creative Intelligence, the MIU/MERU educational methodology provides a study of the full range and development of human potential, leading to a sound practical understanding of the principles according to which intelligence and consciousness operate. These are abstracted from processes inherent in the functioning of consciousness in the nervous system and are studied in parallel to similar principles operating in other natural processes. The principles of the Science of Creative Intelligence can thus be seen operating in any system or any subject area and thereby provide a close connection between the student or knower's subjectivity and the objectivity of the material he studies or knows. When external processes and the laws governing them are connected directly to the internal processes of experience, all subjects of study become relevant to the student: the learning process now relates directly to the knowledge and experience of the most intimate values of the student's own inner life.

Furthermore, the acquisition of knowledge in the MIU/MERU courses progresses hand in hand with the development of consciousness, which may be best understood with reference to one of the central epistemological principles underlying the MIU/MERU educational theory and practices. This principle may be summarized in the expression *knowledge is structured in consciousness* and refers in one sense to the understanding that knowledge is a function of the state of consciousness of the individual and varies accord-

ing to his subjective state. Consequently, if the level of consciousness and the ability to comprehend are growing at the same time as new knowledge in the conventional sense is acquired, the student's ability to assimilate this knowledge, to structure it in new and richer ways in his awareness, and thus to gain fulfilment through learning and discovery is also increasing.

The expression 'knowledge is structured in consciousness' has further implications relevant to our discussion of how the Science of Creative Intelligence is able to make education fulfilling. Consciousness is considered to be the basis of all knowledge, and because consciousness contains within its nature the ability to apprehend all the knowledge to which man has access, it may be said to contain potentially all the knowledge that a man may gain. Consequently, we may speak of consciousness as the 'home of all knowledge'. The experience of fully developed consciousness, 'the home of all knowledge', through the practice of the Transcendental Meditation technique is itself completely fulfilling and constitutes the ultimate fruit of the acquisition of any specific piece of knowledge, it is 'the fruit of all knowledge' referred to earlier. Established in the experience on that level of consciousness, which is at the basis of the ability to know and which is at the same time the fruit of all knowledge, the student experiences every step of learning as a wave of fulfilment within the underlying fulfilment he is already enjoying on the level of his own consciousness.

It is not to be thought, however, that this is the description of something highly abstract. The MIU/MERU educational methodology, using the simple procedure of the Transcendental Meditation technique, the Science of Creative Intelligence, and a wealth of interdisciplinary material, is highly practical, adapted to every level of education, and makes these abstractions a very real and concrete experience. A more detailed description of the MIU/MERU methodology for making education fulfilling is to be found in the *MIU Catalogue*. See also the next section entitled 'MERU Educational Programmes'.

Problems of Behaviour

Problems of behaviour in education arise from a combination of dissatisfaction with the educational situation and society, and stress within the pupils, students, and other members of society. The result is frequently seen in various expressions of frustration. Increasingly disturbed behaviour is exhibited even when the pupil first enters the educational system, and subsequently the educational system generally proves unable to develop orderliness in thinking and behaviour.

A prominent characteristic of the psychophysiological development resulting from the practice of the Transcendental Meditation technique is an increase in the orderliness of the thinking process which is correlated with more responsible behaviour and more integrated personality. This integrated development occurs side by side with a progressive decrease in symptoms of stress and tension in behaviour, enabling behavioural abnormalities to disappear and conflicts among pupils and students, between pupils and teachers, and between students and college or university authorities to be minimized.

The Irreconcilable Gap Between the Generations

This problem, arising in part from the failure of the younger generation to be inspired by or to appreciate the wisdom and experience of the elder, is further aggravated by the in-

ability of the elder generation to remain flexible in its outlook in a rapidly changing world. Where the younger generation feels that the older generation is out of touch with the new realities of life resulting from the increase of scientific knowledge, and where the qualities of wisdom fail to grow in the old on the basis of ever-developing consciousness, the old will not enjoy the respect of the young. Nor will youthful vitality in its growth towards maturity be complemented, tempered, and inspired by the invaluable guidance and wisdom of those of more mature years. Yet disharmony between generations is not natural to life; rather it represents an idiosyncratic feature of our culture, a feature which, aside from the impoverishment to the quality of life that it causes, greatly weakens our social cohesion and is the direct and indirect source of numerous social problems.

Education is a field in which the generation gap itself can be used to enrich both sides and support the evolution of old and young alike, especially where strong and experienced teachers with complete mastery of their subjects are able to inspire the confidence of the students. At a time when such teachers are all too few, it is essential that the educational process provide a means for developing the consciousness of both the student and the teacher. It is by catering simultaneously for the development of consciousness of both pupil and teacher that education can best transform the generation gap into a source of mutual enrichment, and in such a situation the pupil will grow rapidly while the teacher will, at the same time as he rises to full mastery of his field, develop fully as a person worthy of respect. This reconciliation of the generation gap within the educational context, but by no means confined to it, is brought about in two ways. The first, as a result of the Transcendental Meditation programme, is on the level of experience, where the increase in tolerance and maturity of outlook on the part of the young and the concomitant increase in vision, flexibility, and harmony on the part of the elder generation, serve to eliminate the roots of discord between the generations. The second, as a result of the Science of Creative Intelligence, is on the level of understanding. It is an important principle of the Science of Creative Intelligence that differences are natural and that a system based on the harmonious blending of differences is stronger and can rise to higher levels of achievement than one which is uniform. Thus, students educated in the Science of Creative Intelligence not only accept differences of age and outlook but grow to enjoy the natural diversity of life.

The Failure of Education to Adequately Prepare the Student for His Future Life as an Ideal Citizen

The purpose of any system of education is to prepare the student for his adult life, so that feeling completely at home in all his endeavours he can find success and fulfilment, and at the same time contribute fully to the well-being of society as a whole. For this reason, the student needs broad and mature vision in order to be able to judge the best lines of activity open to his particular talents, so that both he and society will gain the maximum.

The systematic development of consciousness is considered at MERU to be essential if this purpose of education is to be fulfilled. The progressive development of consciousness by means of the Transcendental Meditation programme, as we have observed, results in a systematic growth of desirable human qualities. This growth is not partial but involves every important aspect of mind, body, and behaviour. As the individual grows in his mental capacities, with powers of concentration, of memory, and creativity in-

creasing, he is also developing a more stable and healthful style of physiological functioning, and at the same time a more pleasant, stable, and developed psychological state. Growing in these qualities, which the most recent research on the Transcendental Meditation programme is beginning to understand in terms of growth towards a state of full human development — a state of enlightenment — the individual is growing in the qualities that will make him an ideal citizen, and enable society as a whole to become increasingly stable, harmonious, and creative.

Since the MIU/MERU educational methodology reflects a concern with the need for growth in every aspect of life, it is considered necessary not only to follow the intellectual growth of the student in the usual way, but to supplement this with regular monitoring of the physiological and psychological parameters that reflect the overall level of integration and development in the individual. Physiological functioning, after all, maintains thought and action, and should therefore reflect faithfully not only the extent to which subjective expansion of awareness has been established, but also what the strong and weak areas in an individual's overall development are. Many of the parameters reflecting integration and development and the growth of consciousness are already accessible to measurement and have been used in measuring the evolution of consciousness through the Transcendental Meditation programme. So it is possible with some accuracy by using a number of measures at the same time (such as electroencephalogram readings, oxygen consumption, blood chemistry, skin resistance, and spontaneous and evoked galvanic skin response, in conjunction with an array of psychological tests) to follow the progress of the student in his growth to enlightenment, year by year, and even month by month. Further research is continuing at MERU, in the psychophysiology laboratory and at the advanced courses in the Transcendental Meditation programme, to refine the measures that will eventually enable us to pinpoint physiologically the exact degree to which an individual has progressed towards being an ideal citizen, and an enlightened member of society. Success in this area will not only revolutionize the concept of educational testing, but current attitudes to the role and capacity of education as a whole.

Besides ensuring the overall growth of the student and pupils in its charge, the MIU/MERU system of education, using up-to-date teaching methods, provides the student with a solid grounding in the essential elements of a broad range of subjects, thereby giving the student not only the means to gain and utilize knowledge to best advantage, but also the practical elements of knowledge to enable him to see more clearly the context of his undertakings with respect to his overall goals. As a result the student is able to select the range of activities that correspond to his special talents and interests, with the maturity and vision that will guide him to the most appropriate choice of career and other pursuits — for the mutual benefit of self, family, and society.

The Lack of a Holistic Basis to Knowledge

The interdisciplinary foundation provided by MERU, which we have just described in terms of its practical value in making the student better equipped to utilize the range of complexities that constitute the modern world for his own and society's benefit, also solves another important problem in education: the lack of a holistic basis of knowledge.

At present the education system finds itself oscillating between the view that education

should be broad-based if it is to be useful to the general needs of pupils and students, and the view that specialization is essential, even from an early age, if the student is to gain more than a superficial view of what he is studying, and if he is to gain the specialized knowledge that will equip him adequately in one field at least.

So far, interdisciplinary and general studies programmes have met with only partial success due to a lack of cohesion in the material presented and due to the limited insight into the knowledge that the student actually gains in the short amount of time available to any particular subject.

The MIU/MERU educational programmes are able to circumvent this problem in the following way: interdisciplinary material is prepared reflecting the central points of interest, the most stimulating principles and issues of a given field, and this material is always related to the principles of the Science of Creative Intelligence and thus to the nature of the student's own consciousness. Earlier, the importance of this approach as a means for making knowledge fulfilling was emphasized, but it has a further value: all the different areas of knowledge, which would otherwise have been isolated, are brought into close contact. On the basis of an understanding of how his own inner creative intelligence functions, the student is able to apprehend the same dynamic processes at work in all the fields of knowledge that man has organized into the various academic disciplines. The MIU/MERU interdisciplinary courses thus have the dual advantage of providing a fundamental insight into the essential elements of each discipline and of keeping the material covered manageable, stimulating, and profound. Later this holistic basis to knowledge, which is kept lively on the ground of expanded consciousness, is not lost as specialization proceeds, thereby eliminating the confinement and alienation that often occurs as a result of premature or extreme specialization.

At Maharishi International University, a complete first year interdisciplinary course, using the principles outlined above, has already been taught with excellent results to several hundred undergraduates. In the first year curriculum twenty-four ten-lesson courses covering a wide range of arts and sciences are taught using special video-recorded materials. In the second, third, and fourth years at MIU, the student goes on to specialize in the area of his choice. It has been our experience that this material taught in the first year generates a lively and enthusiastic response, enabling the student to make the best choice of subjects for advanced study and inspiring him to delve deep into knowledge.

Conclusion

The foregoing discussion of the nature of, and solutions to, the various intractable problems facing education confirms our original hypothesis that if education has never been able to realize its goals, it is because of lack of some fundamental element. This lack arises not from the inability to provide knowledge, but from the inability to expand the container of knowledge — the consciousness — which is at the basis of the ability to learn. Moreover, the failure to develop the capacity of the individual to know and to understand is part of a wider inability: the inability to promote full, integrated growth of the individual — mind, body, and behaviour.

Research at MERU in the field of education has resulted in the development of a practical

and theoretical approach to education that has already confirmed its capacity to eliminate this fundamental lack and thus to alleviate the ubiquitous educational problems discussed above. Already MERU's educational programmes have been successfully applied in almost every area of education: school, university, continuing education, and rehabilitative education. Further implementation of MERU's educational programmes will enable educational systems everywhere to surpass any past achievement and fulfil their declared objectives.

MAHARISHI EUROPEAN RESEARCH UNIVERSITY (MERU) EDUCATIONAL PROGRAMMES*

The range of educational programmes offered by Maharishi European Research University is vast. Over 5,000 hours of videotaped material is available covering every conceivable area of human concern, in addition to specific programmed courses of instruction given by qualified teachers in every academic and professional field. Yet the basis of all this great wealth of knowledge is profoundly simple. It is:

1. The Transcendental Meditation technique offered at each of the 1,500 Centres of the Age of Enlightenment
2. The system of TM-sidhi programmes offered at Maharishi European Research University.

In these basic courses all that is required to reach the simplest state of awareness and act from that level to gain mastery over all the laws of nature is provided. Yet because the consequences, ramifications, and applications of this skill are so great, courses have been developed to apply the programmes and their resulting knowledge in every field.

A unique feature of this programme of specialized academic courses utilizing the Transcendental Meditation technique, and the TM-sidhi programmes is the unique concept of examination devised at Maharishi European Research University. In the past, students have been examined on the basis of their ability to utilize and reproduce knowledge in examination situations only. This has never been a successful means of examination, as it omits the development of the entire personality of the student—his physiological, psychological, and social performance. As a result of work at the Maharishi European Research University psychophysiology laboratories, accurate

*Programmes developed by Maharishi European Research University are sponsored by the Ministry of Education of the World Government of the Age of Enlightenment. These programmes are available at 1,500 Capitals of the Age of Enlightenment established through the World Plan, formulated by Maharishi Mahesh Yogi in 1972 to eliminate the age-old problems of mankind in this generation. The World Plan divided the whole population of the world into segments of one million and aimed at introducing the Science of Creative Intelligence and the Transcendental Meditation programme to the entire population of the world. The Science of Creative Intelligence is taught by 13,000 Teachers in 1,500 Centres. Since Maharishi inaugurated the dawn of the Age of Enlightenment in 1975, these Centres are now called Capitals of the Age of Enlightenment and are being co-ordinated by the World Government of the Age of Enlightenment from the International Capital in Seelisberg, Switzerland. International assemblies on education, health, rehabilitation, business and industry, and government are a regular feature of activity at the International Capital of the Age of Enlightenment.



Many of the educational courses structured and offered by Maharishi European Research University are recorded on colour video-tape, and can thus be made available in any part of the world.

physiological and psychological parameters of higher states of consciousness have now been identified. Using such measures as EEG coherence, field independence, sensory acuity, and autonomic stability, it has become possible now to establish the degree of enlightenment of the student as well as his intellectual grasp of knowledge. The broad areas covered by Maharishi European Research University courses includes:

- Primary Education
- Secondary Education
- Undergraduate Education
- Teacher Training
- Graduate Education
- Business and Industry
- Health and Rehabilitation
- Government

In each of these areas the full range of traditional knowledge is given, integrated with programmes for the maximum development of consciousness in the student. The aim of each course is to allow the development of a fully enlightened graduate who has absolute mastery of his field, an ideal citizen who has perfected his awareness to the point where he never makes mistakes. In this way fully developed degree programmes in mathematics, physics, biology, arts, social sciences, psychology, history, management, health, and government are available to every country and local community. With this resource available no area of the world need be without enlightened graduates capable of achieving the highest ideal of human life for their society.

RESEARCH ON CONSCIOUSNESS AS THE FIELD OF ALL POSSIBILITIES

The Goal of Maharishi European Research University

In his inaugural address at the founding of Maharishi European Research University in April 1975, Maharishi Mahesh Yogi emphasized co-operation with other universities and research institutions and delineated three areas of activity in which the university would participate. Firstly, it would be the function of MERU to perform and co-ordinate research into higher states of consciousness and into the application of the knowledge so gained to various spheres of life.

Secondly, MERU would sponsor conferences at regular intervals, giving focus to the phenomenon of consciousness and its relationship to all fields of academic thought. In addition, faculty members of MERU would participate in conferences held at other institutions, in order to make the knowledge of the growth of consciousness more widely available.

Thirdly, the multi-disciplinary team at MERU would have the responsibility of developing courses describing the relationships among the Transcendental Meditation technique, the growth of consciousness, branches of academic knowledge, and various practical fields of application.

Centre for the Study of Higher States of Consciousness

The major part of the research conducted at MERU during the past two years has been in the Centre for the Study of Higher States of Consciousness. Detailed investigations have been made of the electroencephalographic (EEG) changes taking place during the Transcendental Meditation technique, particularly in advanced subjects who have had several years of practice of the technique. Various electrophysiological and physiological measurements have been made, including electromyogram, electro-oculogram, electrocardiogram, respiratory gas analysis, breath rate, and Hoffmann reflex. In a number of cases, psychological tests of creativity have been administered as well, and the laboratory protocol includes subjective reports of experience during the Transcendental Meditation technique.

A feature of the EEG equipment is an on-line computer facility giving real-time frequency analysis of electrical activity in the brain and a spectral array of coherence between any selected pair of EEG signals. This feature has made it possible to distinguish various EEG patterns characteristic of periods of the Transcendental Meditation technique, which have included high values of inter- and intra-hemispheric coherence in the alpha (8–12 Hz) and theta (4–7 Hz) bands. Of even greater significance is the result that high values of EEG coherence have been found to coincide with high scores on a creativity test, more rapid recovery of the Hoffmann reflex (a measure of neurological responsiveness), and the clarity of experience during the Transcendental Meditation technique. This particular result has great relevance in the context of the objective of MERU to identify procedures that bring about a holistic growth of the individual, since the clarity of experience — indicating the growth of the individual towards higher consciousness —

was found to be intimately related to more efficient and evolved values of both the physiology and psychology.

Other studies in the MERU Centre for the Study of Higher States of Consciousness have enabled further features of the neurophysiological state gained during the Transcendental Meditation technique to be evaluated. In particularly advanced participants in the Transcendental Meditation programme, patterns of spontaneous periodic suspension of respiration have been found, the periods of respiratory suspension coinciding with high EEG coherence, decreased heart rate, and subjective reports of experiences of transcendental consciousness (inner pure wakefulness without thoughts).

Particularly exciting is the recent discovery that the stabilization of pure consciousness, known by the continuity of pure awareness throughout night sleep ('witnessing'), is strongly correlated with high EEG coherence. The higher the coherence and the greater the number of areas of the brain in which it is found, the greater the stabilization of pure awareness. This discovery reveals the first psychophysiological correlates of the state of enlightenment or cosmic consciousness. High EEG coherence shows that the human nervous system is capable of extremely precise firing patterns involving virtually millions of neurons. This remarkably high degree of correlated activity in the nervous system parallels Maharishi's characterization of pure awareness as a state of infinite correlation.

Furthermore, it has been found at MERU that high EEG coherence and its correlate, stabilized pure awareness, are the basis for the full unfoldment of human potential in a way that has previously only been known to modern man through the ancient literature on higher states of consciousness. This research is proving that consciousness is indeed the field of all possibilities.

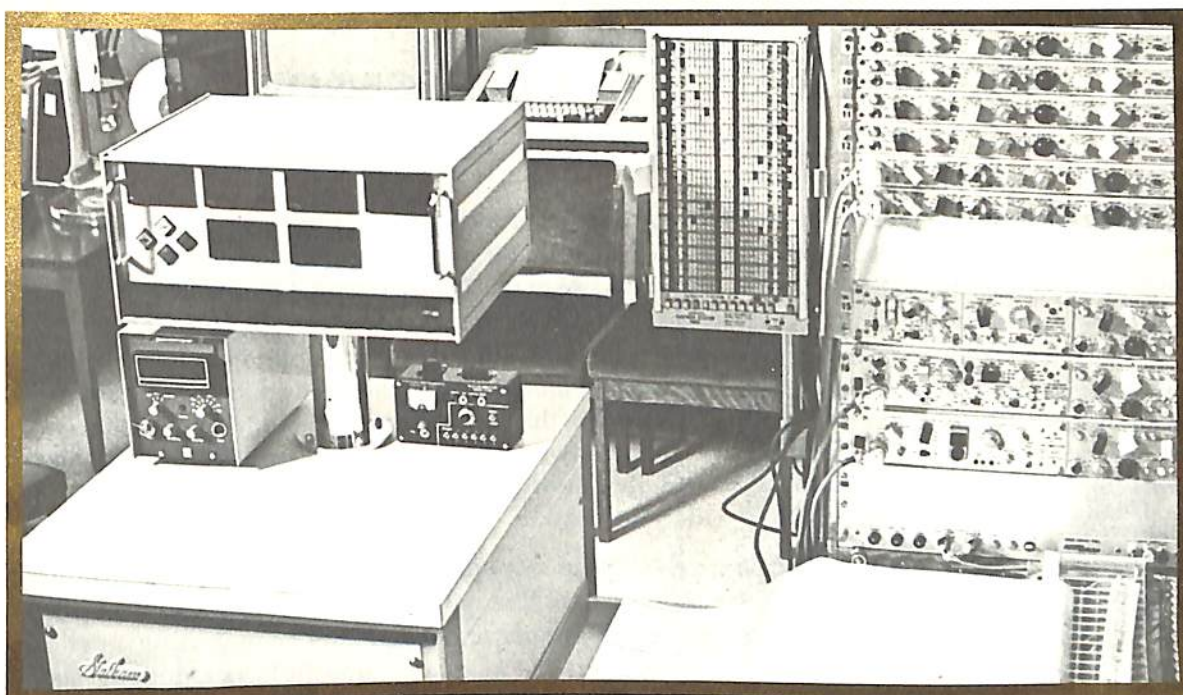
Two new main areas of experimental research are now being pursued: psychology and biochemistry.

In the area of psychology the equipment and procedures allow for a wide range of perceptual and cognitive studies. The newly acquired laboratory includes a 3-channel tachistoscope for visual studies, and a Von-Bekesy audiometer for auditory studies. Research commencing this April on participants in advanced MERU courses in the Transcendental Meditation programme includes a battery of 36 perceptual, cognitive, and perceptual-motor experiments and will monitor the longitudinal development experienced on these courses. The psychological measures are being administered in parallel with a longitudinal EEG study.

A biochemistry laboratory is currently being developed to measure hormonal and other biochemical changes taking place in the Transcendental Meditation technique and as a result of longer courses in the Transcendental Meditation programme.

It is anticipated that by combining these three areas of experimentation in an environment where higher states of consciousness can be experienced regularly and systematically, it will be possible to build a true and complete picture of the physiology and psychology of higher states of consciousness.

The theme of the advanced courses in the Transcendental Meditation programme offered by MERU is 'Research on Consciousness as the Field of All Possibilities'. During these courses, the participants — all of whom have a number of years of experience with



A view of the EEG laboratory at the Centre for the Study of Higher States of Consciousness, MERU, Seelisberg, Switzerland.

the TM programme — not only accelerate their personal growth with more extended practice of the technique, but also engage in the practice of certain procedures, the TM-sidhi techniques, that are designed to enhance mind-body co-ordination to its maximum. These procedures also act as a test of the development of consciousness, and have proved extremely effective in opening new channels of mind-body co-ordination — even to the extent of the mind asking the body to lift up, with a tendency to fly and float in the air.

In a study conducted on course participants in MERU advanced courses in the TM programme, it was found that the highest degrees of EEG coherence were displayed in those individuals with the highest levels of mind-body co-ordination in the TM-sidhi techniques. In addition these individuals scored highest in a creativity test and had the clearest experiences of transcendental consciousness.

Other sidhis, performed in a group context in the MERU courses, develop to an extreme degree the qualities of friendliness and compassion — generating within the group a degree of correlation far greater than is usually experienced even between close friends. This can be seen in one sense as an extension of the perfect correlation occurring within individual awareness during the Transcendental Meditation technique, and has been related by Maharishi to the ability of the TM programme to generate peace and harmony within society and the world.

The following section of charts presents in summary form the results of research on the TM programme and on participants in the Age of Enlightenment Governor Training Courses developed at MERU in Switzerland and now being made available to meditators everywhere.

RESULTS OF SCIENTIFIC RESEARCH ON THE TRANSCENDENTAL MEDITATION PROGRAMME

The following charts are representative summaries of over 200 scientific studies undertaken at over 100 independent research institutions throughout the world on the physiology, psychology, and social behaviour seen as a result of the practice of the Transcendental Meditation technique.* Studies in physiology have indicated that the TM technique operates simply by allowing the activity of the body and nervous system to settle down to a state of profound restful alertness. In this state, awareness remains at a high level even though metabolic rate is reduced to values even lower than those found in deep sleep. The result of this state of least excitation of physiology is the spontaneous development of orderliness, as shown by coherence and regularity of brain wave patterns seen in the EEG, and improvements shown by measurements of heart rate, skin resistance, hormone production, and muscular tension.

This normalization of physiology then gives rise to more perfect performance in thinking and behaviour outside of the TM technique. Examples of this have been seen in studies showing improved perception, greater learning ability, and greater organization of memory after a period of practising the Transcendental Meditation technique. At the same time the basic emotional state of the individual becomes more stable, as shown by reports of reduced anxiety, improved work satisfaction, and greater success in life among those participating in the TM programme. Studies at schools and universities have shown that the TM programme improves the student's ability to achieve better academic performance and to enjoy learning.

Other studies have shown improvements in health, such as reduced blood pressure and lessened psychosomatic disturbances, as well as evidence of faster reactions, more accurate performance in skilled tasks, and greater athletic ability.

These results indicate that the TM technique is a simple and natural means to improve human achievements far beyond what used to be regarded as 'normal'. Through this technology for expanding creative intelligence it is possible to envision the highest achievements of the great men of the past coming within the range of the everyday abilities of the present generation.

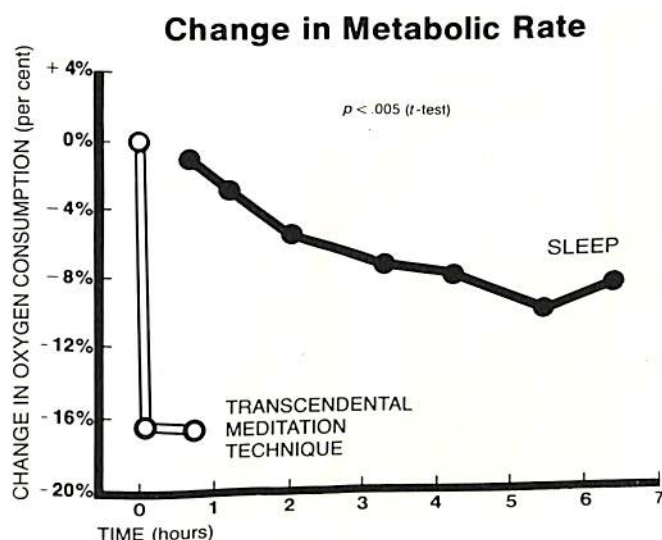
This is now being explored further by current research on higher states of consciousness and the TM-sidhi programme being conducted at MIU and MERU. The state of enlightenment, perfect co-ordination between mind, body, and environment, can be observed neurophysiologically as a high degree of coherence in the brain waves (see chart P1). Development of high EEG coherence in large regions of the cortex is paralleled subjectively by the stabilization of pure consciousness. Growth towards enlightenment is also accompanied by the full unfoldment of creative potential (see charts P2, P3).

When pure consciousness, the level of infinite correlation, is enlivened by the individual, it nourishes life everywhere. Therefore, as individuals rise to the state of enlightenment, so will society.

* The charts in this section are excerpted from the MERU publication, *Results of Scientific Research on the Transcendental Meditation Programme*, which contains graphic summaries of research reports. The numbering of the charts (A1, B3, etc.) is from that book. The original research papers are reprinted in full in *Scientific Research on the Transcendental Meditation Program: Collected Papers*, Vol. I, eds. David W. Orme-Johnson and John T. Farrow, West Germany, MERU Press, 1976.

CHART A1

Levels of Rest



Finding: Metabolic rate was obtained by measuring oxygen consumption in 20 subjects during the Transcendental Meditation technique. The study showed that during the TM technique oxygen consumption markedly decreases. The average decrease was 16 per cent within the first ten minutes of a session of the Transcendental Meditation technique. Further, the study showed that the partial pressures of oxygen and carbon dioxide in the blood remained essentially constant. The decrease in metabolic rate during the Transcendental Meditation technique was greater and much quicker than during deep sleep.

Interpretation: The decrease in total oxygen consumption during the Transcendental Meditation technique indicates a unique state of deep rest.* This decrease is not caused by manipulation in breathing pattern or forced deprivation of oxygen, but is a natural physiological change due to a lowered requirement for oxygen by the cells during this effortless process.

* Ref. charts B1, C1-C4, E5—biochemical, electrophysiological and electromyographic evidence of deep rest; charts K2, K4, K9, K11-K17, K24—decreased anxiety.

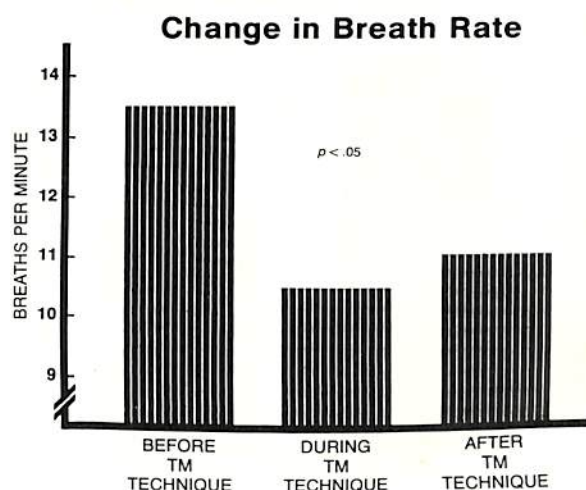
First Reference: Robert Keith Wallace and Herbert Benson, 'The Physiology of Meditation', *Scientific American* 226, no. 2 (U.S.A.: 1972): 84-90.

Second Reference: Robert Keith Wallace, Herbert Benson, and Archie F. Wilson, 'A Wakeful Hypometabolic Physiologic State', *American Journal of Physiology* 221, no. 3 (U.S.A.: 1971): 795-799.

Third Reference: Robert Keith Wallace, 'The Physiological Effects of Transcendental Meditation: A Proposed Fourth Major State of Consciousness', Ph.D. Thesis, Department of Physiology, University of California, Los Angeles, California, U.S.A., 1970.

CHART A4

Natural Change in Breath Rate



Finding: In this study the breath rate of five long-term participants in the TM programme (average time practising the technique 30 months, average age 24 years) was measured by a thermistor technique during a pre-control period (eyes closed for 10-20 minutes), a Transcendental Meditation technique period (20-40 minutes), and a post-control period (10 minutes). There was a statistically significant decrease in breath rate during the Transcendental Meditation technique of about three breaths per minute, which was carried over into the post-control period.

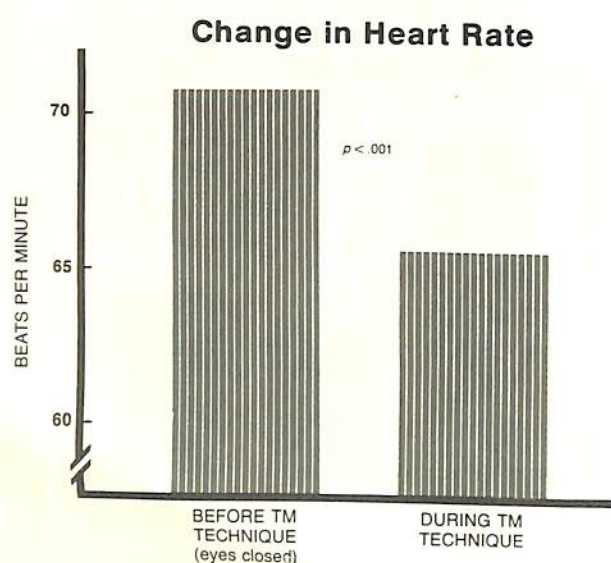
Interpretation: Slowing of the breath is one sign of a relaxed, rested state.* The Transcendental Meditation technique is a purely mental process that involves no attempt to manipulate the breath directly. Therefore, any change in breath rate is natural, spontaneous, and effortless.

* Ref. charts A1-A3, A5-A9, A11, E7—metabolic evidence of deep rest; chart B1—biochemistry of deep rest; chart E5—electromyographic evidence of deep rest; charts K2, K4, K9, K11-K17, K24, N3—decreased anxiety.

Reference: Robert Keith Wallace, 'The Physiological Effects of Transcendental Meditation: A Proposed Fourth Major State of Consciousness', Ph.D. Thesis, Department of Physiology, University of California, Los Angeles, California, U.S.A., 1970. Published in Volume I, *Scientific Research on the Transcendental Meditation Program: Collected Papers*.

CHART A7

Reduced Heart Rate



Finding: Heart rate was recorded by electrocardiogram in 11 long-term participants in the Transcendental Meditation programme (average time practising the TM technique 25 months, average age 23 years). During the Transcendental Meditation technique the average decrease in heart rate was five beats per minute compared with the rate before practice of the technique (sitting with eyes closed).

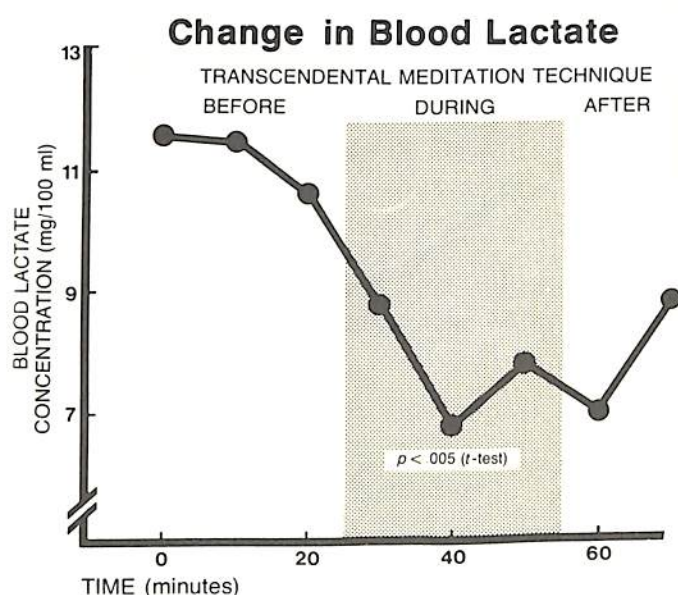
Interpretation: When taken together with additional data from the same study, this finding suggests that cardiac output also decreases, implying a reduction in the work load of the heart during the Transcendental Meditation technique.*

* Ref. charts A8, A9, E1, H4—reduced heart rate; chart G1—normalization of high blood pressure; chart G8—increased exercise tolerance.

Reference: Robert Keith Wallace, 'The Physiological Effects of Transcendental Meditation: A Proposed Fourth Major State of Consciousness', Ph.D. Thesis, Department of Physiology, University of California, Los Angeles, California, U.S.A., 1970. Published in Volume I, *Scientific Research on the Transcendental Meditation Program: Collected Papers*.

CHART B1

Biochemistry of Deep Rest



Finding: During the Transcendental Meditation technique the concentration of blood lactate markedly decreases and remains low for some time after practice of the technique.

Interpretation: Decreased blood lactate is thought to indicate a profound state of muscular relaxation.* A high concentration of lactate in the blood has been associated with anxiety neurosis, anxiety attacks, and high blood pressure. Therefore, the persistent decrease in lactate during and after the Transcendental Meditation technique is a biochemical correlate of an overall decrease in anxiety.†

* Ref. charts A1–A11—metabolic evidence of deep relaxation; charts C1–C4—decreased sympathetic tone; deep relaxation; charts D1, D2, D8, D9—EEG evidence of restful alertness.

† Ref. charts K2, K4, K9, K11–K17, K24, N3—decreased anxiety.

First Reference: Robert Keith Wallace and Herbert Benson, 'The Physiology of Meditation', *Scientific American* 226, no. 2 (U.S.A.: 1972): 84–90.

Second Reference: Robert Keith Wallace, Herbert Benson, and Archie F. Wilson, 'A Wakeful Hypometabolic Physiologic State', *American Journal of Physiology* 221, no. 3 (U.S.A.: 1971): 795–799.

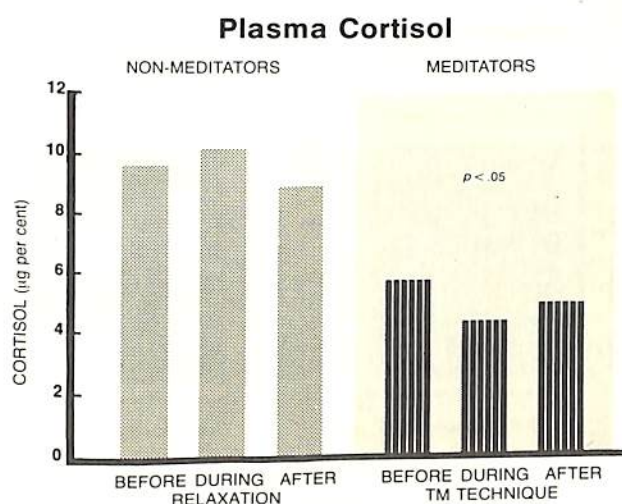
TRANSCENDENTAL MEDITATION PROGRAMME

PART B2

Biochemistry of Reduced Stress

CHART B3

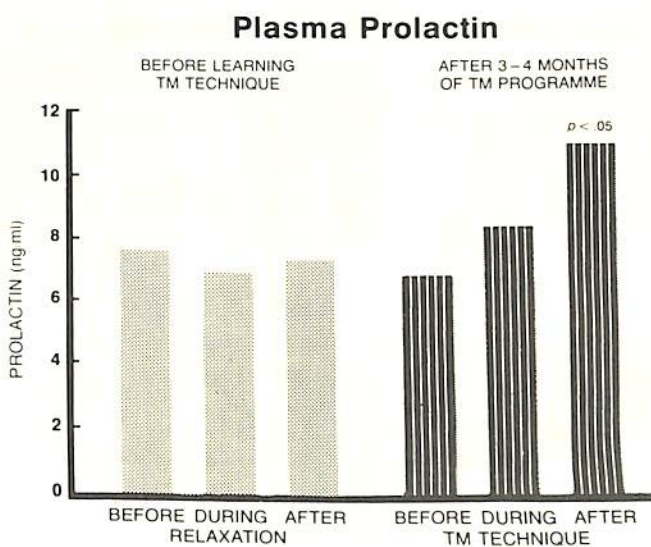
Biochemical Correlates of States of Consciousness



Finding: Plasma cortisol was found to decrease significantly during the practice of the Transcendental Meditation technique in individuals who had participated in the TM programme for three to five years, whereas it did not change significantly in control subjects during ordinary relaxation. Furthermore, this group of TM programme participants had relatively low plasma cortisol levels at all times, by comparison to the general population.

Interpretation: Increased cortisol levels are known to be correlated with states of increased anxiety and with decreased resistance to certain diseases, signs of lessened physiological integrity. The decrease of plasma cortisol due to the TM programme as seen in this study therefore indicates fundamental changes in the body's biochemistry in the direction of less stressful, more efficient functioning. This endocrinological finding reinforces other studies in the areas of metabolism, electrophysiology, electroencephalography, and psychology (charts A1-A11, D1, D8, D9, F1-F4, K2-K17), which indicate lowered stress through the TM programme. Lower cortisol implies lessened adreno-cortical activity, which is correlated with reduced anxiety. Also, it should be noted that this effect contrasts with that produced by sleep; no close relationship exists between sleep and cortisol variation. This means that the TM technique induces a form of rest which may be distinguished from that of sleep.

Reference: R. Jevning, A. F. Wilson, E. VanderLaan, and S. Levine, 'Plasma Prolactin and Cortisol during Transcendental Meditation', *The Endocrine Society Program 57th Annual Meeting*, New York City, 18-20 June 1975, p. 257.



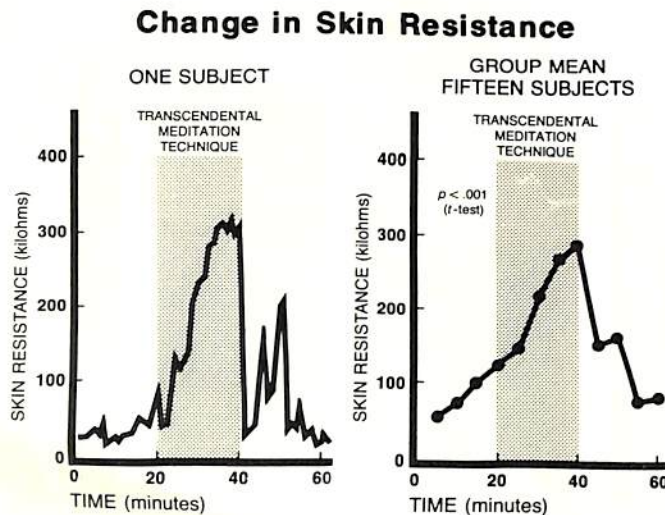
Finding: Plasma prolactin was found to increase significantly immediately following the period of the TM technique in both long- and short-term TM programme participants (although it remained stable during the actual period of the technique). By contrast, prolactin levels in control subjects remained stable before, during, and after ordinary relaxation.

Interpretation: Prolactin is an important component of the biochemistry of the body, having many complex interrelationships with various physiological and neurological systems. In this experiment, the prolactin level is used as an indicator to distinguish different states of consciousness. That prolactin remains stable during the period of the TM technique and rises immediately after it clearly distinguishes the state produced by this technique from sleep; prolactin is known to rise at sleep onset and decline after sleep. Also, the experiment shows that major biochemical effects develop outside of the period of practice of the TM technique, supporting other findings of physiological, psychological, and metabolic cumulative effects from the TM programme (charts E1-E3, F1-F4, G1, H1-H5, J1-J9).

Reference: R. Jevning, A. F. Wilson, E. VanderLaan, and S. Levine, 'Plasma Prolactin and Cortisol during Transcendental Meditation', *The Endocrine Society Program 57th Annual Meeting*, New York City, 18-20 June 1975, p. 257.

CHART C1

State of Relaxation



Finding: During the Transcendental Meditation technique skin resistance increases significantly. The chart on the left shows a characteristic session of the technique, illustrating the details of changes over time. The chart on the right is an averaged curve for a group of 15 subjects.

Interpretation: During stress or anxiety skin resistance decreases. The marked increase in skin resistance during the Transcendental Meditation technique indicates deep relaxation and reduction of anxiety.* Anxiety is known to be a major factor in many types of emotional and psychosomatic disease† and a cause of blocking of learning ability and creativity.‡ The TM programme thus provides a means of systematically removing one basic limitation to full psychological and physiological development.

* Ref. charts A1–A11—metabolic evidence of deep relaxation; charts D1, D2, D8, D9—EEG indications of restful alertness.

† Ref. charts G1, G4, G5, G7, G8—improved health.

‡ Ref. charts K2, K4, K9, K11–K17, K24, N3—decreased anxiety; chart J2—increased learning ability; charts L1, L2—increased creativity.

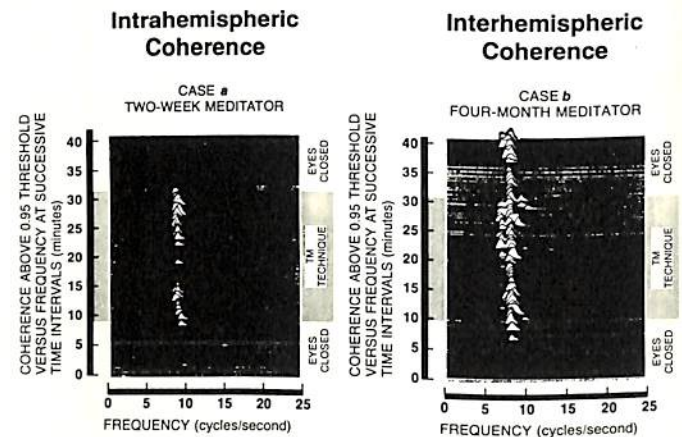
First Reference: Robert Keith Wallace and Herbert Benson, 'The Physiology of Meditation', *Scientific American* 226, no. 2 (U.S.A.: 1972): 84–90.

Second Reference: Robert Keith Wallace, 'The Physiological Effects of Transcendental Meditation: A Proposed Fourth Major State of Consciousness', Ph.D. Thesis, Department of Physiology, University of California, Los Angeles, California, U.S.A., 1970. Published in Volume I, *Scientific Research on the Transcendental Meditation Program: Collected Papers*.

CHART D10

Coherence of Brain Waves

Interhemispheric Coherence



Finding: When EEG recordings are taken from two areas of the scalp during the TM technique, their degree of correlation — as measured by a mathematical quantity called coherence — is found to increase. New computer methods have been developed to spotlight any occurrences of ongoing strong coherence — appearing as 'mountains' in the figures.* Case a shows increases of central to frontal alpha coherence during the TM technique in a subject who had learned the technique two weeks earlier. Case b shows increased inter-hemispheric frontal coherence at alpha-theta frequencies, persisting even after practice of the technique. Such strong and persistent frontal coherence is a common finding in those practising the TM technique.

Interpretation: These examples clearly illustrate that during the TM technique the brain functions in a more orderly and coherent manner as the electrical activity of different parts of the brain becomes co-ordinated at specific frequencies. The abrupt increase of coherence with onset of the TM technique suggests that the nervous system is switching to a distinctly more integrated style of functioning. The occurrence of strong persistent frontal coherence is particularly significant, since the frontal cortex is known to be the highest centre of integration in the human nervous system, influencing such higher abilities and traits as ideational fertility, anticipation of future consequences, judgement, focus of attention, abstraction, conceptualization, reactions to verbal instructions, timing, memory, ethics, tact, and practicality. This study then indicates that the TM programme is a means for developing the full potential of human life by a method of direct neurophysiological development.

* Note that the peaks in this chart and in chart D11 indicate high levels of coherence, whereas those in charts D2 and D4 indicate power levels.

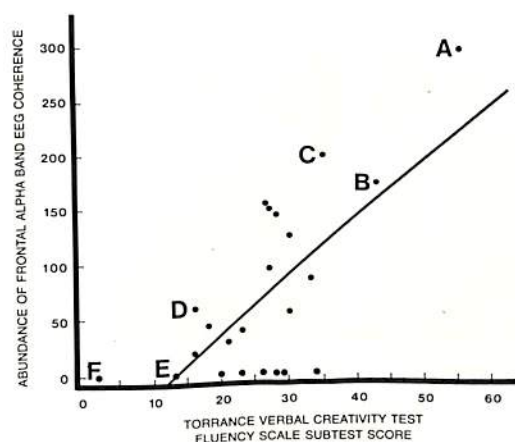
First Reference: Paul H. Levine, J. Russell Hebert, Christopher T. Haynes, and Urs Strobel, 'EEG Coherence during the Transcendental Meditation Technique', MERU Report 7501, Neurophysiology Laboratory, Centre for the Study of Higher States of Consciousness, Maharishi European Research University, Seelischberg, Switzerland, 1975.

Second Reference: Paul H. Levine, 'The Coherence Spectral Array (COSPAR) and Its Application to the Study of Spatial Ordering in the EEG', *Proceedings of the San Diego Biomedical Symposium*, vol. 15 (California, U.S.A.: 1976).

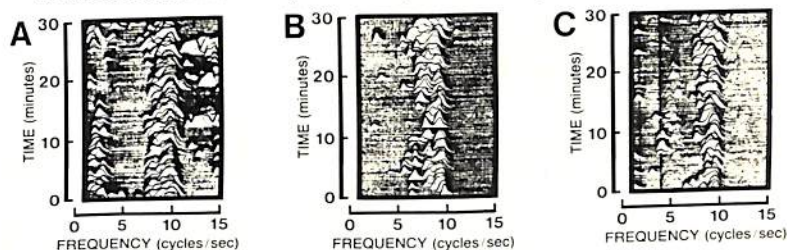
CHART D11

Creativity and Brain Wave Coherence

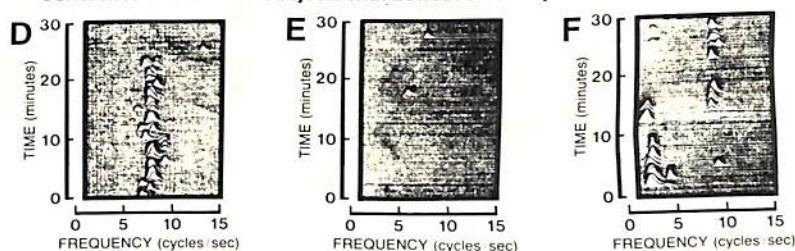
Relation of Individual Scores on Creativity with EEG Coherence



Coherence of the Three Subjects with Highest Creativity Scores of those Tested



Coherence of the Three Subjects with Lowest Creativity Scores of those Tested



Finding: The correlation between creativity and EEG coherence was calculated as part of a larger study (chart D12) of 23 individuals practising the Transcendental Meditation technique and participating in an advanced TM programme in 1975 for training governors of the Age of Enlightenment. The EEG was recorded during the Transcendental Meditation technique, and the coherence between left and right frontal electrodes was computed. Values of coherence in excess of a threshold of 0.95 (on a scale of 0 to 1) were displayed on a coherence spectral array, from which a measure of the abundance of alpha band coherence was derived. The Torrance Test of Creative Thinking was later administered to each subject. A highly significant correlation ($r=0.71$, $p<.001$) was found between this EEG coherence measure and a creativity score (the Torrance verbal creativity test fluency scale sub-test score). In illustration of this, the right hand figures A-F show the EEG coherence spectral arrays of the three subjects with the highest creativity scores and the three subjects with the lowest creativity scores of those studied. Significant correlations were also found between coherence and creativity test scores in other subjects.

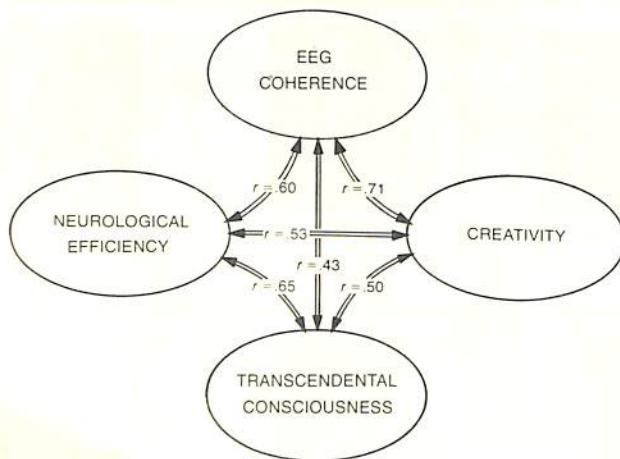
Interpretation: This research provides a neurophysiological basis for understanding the growth

of creativity through the Transcendental Meditation programme, which has been demonstrated by other research (charts L1, L2). Brain wave coherence has already been shown to increase during the practice of the Transcendental Meditation technique (chart D10), and in this study a high level of brain wave coherence is shown to be strongly related to a high level of creativity. Here, coherence is used to measure the integration of the EEG between left and right frontal areas of the brain. This finding supports those psychophysicologists who have emphasized the importance of interhemispheric brain integration for creative thinking. This is objective validation of a principle of the Science of Creative Intelligence, that the coherent ordering of brain function during the TM technique provides the basis for creative activity.

Reference: Christopher T. Haynes, J. Russell Hebert, William Reber, and David W. Orme-Johnson, 'The Psychophysiology of Advanced Participants in the Transcendental Meditation Programme: Correlations of EEG Coherence, Creativity, H-Reflex Recovery, and Experience of Pure Consciousness', MERU Report 7603, Psychophysiology Laboratory, Centre for the Study of Higher States of Consciousness, Maharishi European Research University, Seelisberg, Switzerland, 1976.

CHART D12

Correlations Among Brain Wave Coherence, Creativity, Neurological Efficiency, and Transcendental Consciousness



Finding: A statistical study was conducted on 23 individuals practising the Transcendental Meditation technique and participating in an advanced TM programme for training governors of the Age of Enlightenment. Positive and significant correlations were found among the following parameters: EEG alpha band coherence between the left and right hemispheres of the brain (frontal derivations) during the practice of the TM technique (displayed as in chart D10 and D11); Torrance verbal creativity test (fluency scale sub-test score); recovery of responsiveness at 200 msec after stimulation of spinal motor neurons as measured by paired Hoffmann reflex; clarity of experience of transcendental consciousness (state of least excitation of consciousness) as evaluated by subjects. The correlation between coherence and creativity ($r = 0.71$) was especially strong (chart D11).

Interpretation: Evolution of consciousness, physiology, and psychology occur simultaneously in an integrated manner in persons participating in the TM programme. Clear experience of transcendental consciousness was found to be accompanied by high creativity and orderly, coherent brain waves. In addition, more efficient functioning of the nervous system is indicated by means of the paired Hoffmann reflex.

Previous studies indicate a profound development of isolated aspects of physiology and psychology. In the present study correlations reveal a holistic pattern of growth in all areas of life, subjective and objective, psychological and physiological. These correlations indicate growth towards the state of enlightenment, a state of consciousness characterized by simultaneous perfection of all aspects of the individual.

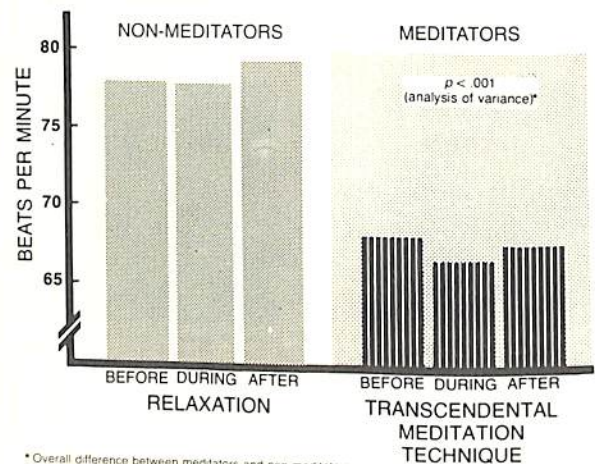
Further physiological characteristics of the growth to this higher state of consciousness, called by Maharishi 'cosmic consciousness', are demonstrated in chart A11 (respiratory suspension). Psychological characteristics of the growth to enlightenment include increased field independence, the ability to maintain an internal frame of reference (chart I4), and increased self-actualization (charts K1, K8, K10, K24).

Reference: Christopher J. Haynes, J. Russell Hebert, William Reber, and David W. Orme-Johnson, 'The Psychophysiology of Advanced Participants in the Transcendental Meditation Programme: Correlations of EEG Coherence, Creativity, H-Reflex Recovery, and Experience of Transcendental Consciousness', MERU Report 7603, Psychophysiology Laboratory, Centre for the Study of Higher States of Consciousness, Maharishi European Research University, Seelersberg, Switzerland, 1976.

CHART E1

Improved Physiology Stabilized Heart Rate

Comparative Levels of Heart Rate



Finding: In this study heart rates were lower for a group of individuals regular in the practice of the TM technique than for a control group not participating in the TM programme, even outside of the practice of the TM technique.

Interpretation: Combined with the finding that heart rate decreases significantly during the Transcendental Meditation technique (charts A7–A9), this result indicates that the Transcendental Meditation technique produces superior physiological rest and causes the heart to maintain a restful pace even during activity, gradually bringing about a permanent improvement in physiological efficiency.*

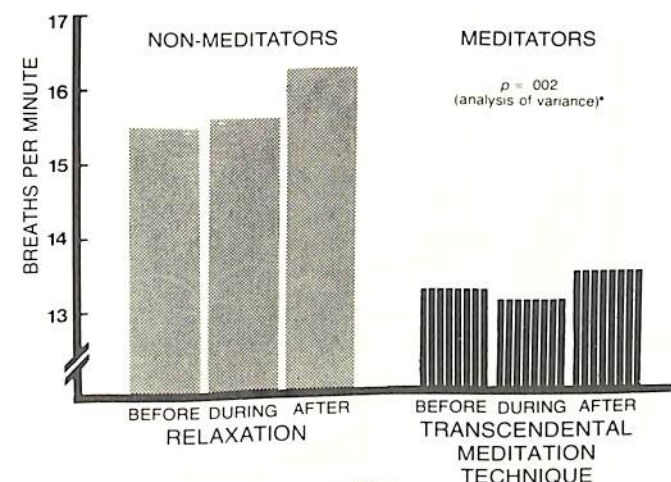
* Ref. chart D12—neurological efficiency; charts A7–A9, A11, E2–E5, F1–F4 — increased physiological efficiency; charts H1–H5 — improved athletic performance; charts I1–I3, I5 — improved perception and motor co-ordination; chart J4—increased speed in solving problems accurately; charts M1–M3, M7 — increased productivity and job performance; charts K2, K4, K9, K11–K17, K24 — decreased anxiety, increased psychological efficiency.

Reference: Thomas J. Routt, 'Low Normal Heart and Respiration Rates in Individuals Practicing the Transcendental Meditation Technique' (Western Washington State College, Bellingham, Washington, U.S.A., 1973). Published in Volume I, *Scientific Research on the Transcendental Meditation Program: Collected Papers*.

CHART E2

Improved Physiology Stabilized Breath Rate

Comparative Levels of Breath Rate



Finding: In this study breath rates were lower before, during, and after the practice of the TM technique for a group of individuals regularly practising the TM technique compared to a control group of individuals not practising the TM technique.

Interpretation: From this and other findings (charts A4, A5, A11) it may be concluded that the Transcendental Meditation technique lowers the breath rate, whereas just sitting with eyes closed does not. The TM technique produces superior physiological rest and causes the breath to maintain a restful pace even after the practice of the technique. This suggests that the Transcendental Meditation programme brings about a permanent and beneficial reduction in breath rate, indicating improved efficiency of the system as a whole.*

* Ref. chart D12 — neurological efficiency; charts E1, E3–E5, F1–F4 — increased physiological efficiency; charts H1–H5 — improved athletic performance; charts I1–I3, I5 — improved perception and motor co-ordination; chart J4—increased speed in solving problems accurately; charts M1–M3—increased productivity and job performance; charts K1, K8, K10, K24 — improved psychology.

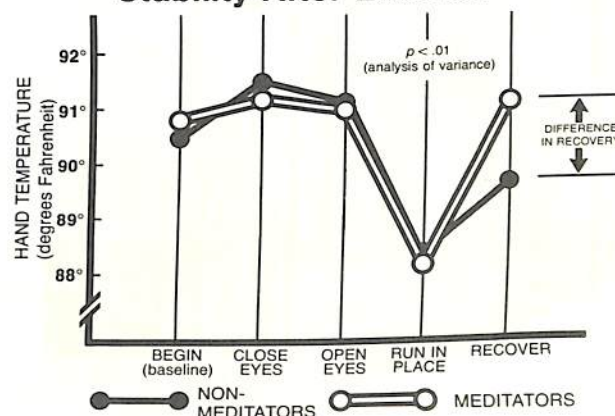
Reference: Thomas J. Routt, 'Low Normal Heart and Respiration Rates in Individuals Practicing the Transcendental Meditation Technique' (Western Washington State College, Bellingham, Washington, U.S.A., 1973). Published in Volume I, *Scientific Research on the Transcendental Meditation Program: Collected Papers*.

CHART E4

Improved Recovery from Exertion

Temperature Homeostasis

Recovery of Temperature Stability After Exertion



Finding: Subjects participating in the TM programme were compared to subjects not participating in the programme by measuring the temperature of the hand before, during, and after a period of vigorous exercise (running in place). The hand temperature of the TM programme participants returned to its baseline value significantly more quickly than that of the controls ($p < .01$, analysis of variance).

Interpretation: This finding of improved metabolic stability in response to physiological stress is especially interesting when combined with other findings of emotional stability in response to sensory stress (charts F2–F4) and stability of personality in response to psychological stress (charts K9, K12, K17, N3). The obvious overall conclusion is that the Transcendental Meditation programme greatly promotes the success of homeostasis, the basic biological ability of a living organism to maintain its internal stability while interacting with a changing environment. Stability is one of the fundamentals of progress.*

* Fundamentals of progress: stability, adaptability, integration, purification, and growth.

Reference: John M. McDonagh and Thomas Egenes, 'The Transcendental Meditation Technique and Temperature Homeostasis' (St. Mary's College and University of Notre Dame, Notre Dame, Indiana, U.S.A., 1973). Published in Volume I, *Scientific Research on the Transcendental Meditation Program: Collected Papers*.

Increased Autonomic Stability

EXAMPLE OF SPONTANEOUS RESPONSES

The left graph plots the number of SSRRs (Y-axis, 0 to 35) against time in seconds (X-axis, 0 to 60). Two traces are shown: a thick line for a 'NON-MEDITATOR' and a thin line for a 'MEDITATOR'. Both traces show a baseline with small fluctuations. A scale bar indicates 100 CHMS.

AVERAGE NUMBER OF RESPONSES

The right graph is a bar chart showing the average number of SSRRs per ten minutes (Y-axis, 0 to 35) for two groups: 'RELAXATION' and 'TRANSCENDENTAL MEDITATION TECHNIQUE'. For each group, three bars are shown: 'BEFORE', 'DURING', and 'AFTER' meditation. The 'RELAXATION' group shows a slight increase from before to during, and a significant increase after. The 'TRANSCENDENTAL MEDITATION TECHNIQUE' group shows a significant decrease from before to during, and a significant increase after. Statistical significance is noted for both groups: $p < .01$ (t-test) for relaxation and $p < .039$ (sign test) for TM.

Group	Phase	Average SSRRs
RELAXATION	BEFORE	~24
	DURING	~23
	AFTER	~30
TRANSCENDENTAL MEDITATION TECHNIQUE	BEFORE	~8
	DURING	~4
	AFTER	~9

Reference: David W. Orme-Johnson, 'Autonomic Stability and Transcendental Meditation', *Psychosomatic Medicine* 35, no. 4 (U.S.A.: 1973): 341-349.

a)

SKIN RESISTANCE RESPONSES TO A STRESSFUL STIMULUS (100 db, 3000 Hz, 0.5 sec)

AMPLITUDE OF RESPONSE (kilohms)

NUMBER OF STIMULUS PRESENTATIONS

———— MEDITATORS
———— NON-MEDITATORS

$p < .01$ (t-test)

b)

10 SEC

MEDITATOR

10 SEC

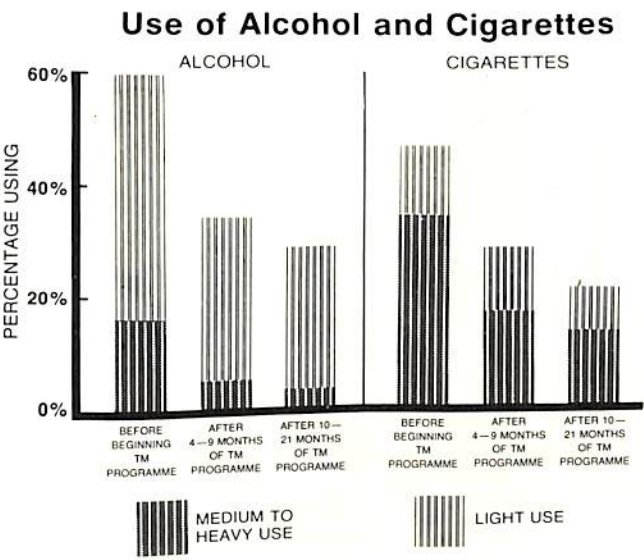
NON-MEDITATOR

MULTIPLE RESPONSES

TYPICAL RESPONSE PATTERNS

CHART G2

Reduced Use of Alcohol and Cigarettes



Finding: A retrospective study of 1,862 subjects who had practised the Transcendental Meditation technique an average of 20 months showed a significant reduction in the reported use of alcohol and cigarettes.

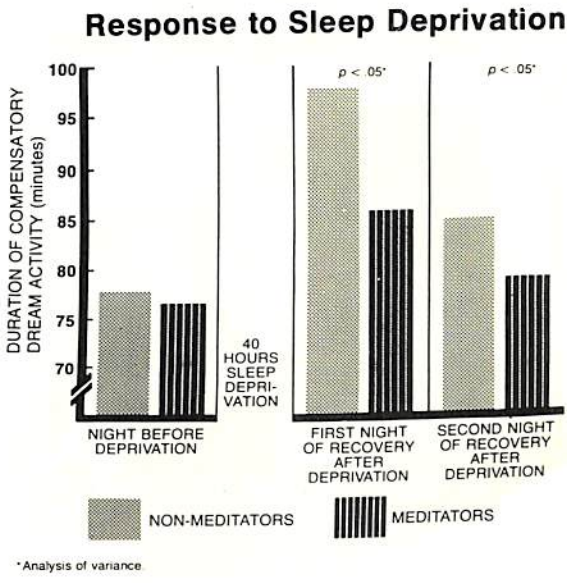
Interpretation: The Transcendental Meditation technique has been shown to provide deep relaxation to the entire nervous system (charts A1, A11, B1, C1, D1, E5) and to remove tensions (charts F1, K11-K17, K24), giving rise to a more calm, restful, and creative functioning of mind and body. These effects may be taken to explain the gradual decrease in the need for alcohol and cigarettes seen in this study.

First Reference: Herbert Benson and Robert Keith Wallace, 'Decreased Drug Abuse with Transcendental Meditation: A Study of 1,862 Subjects', *Drug Abuse: Proceedings of the International Conference*, ed. Chris J. D. Zarafonitis (Philadelphia, Pennsylvania, U.S.A.: Lea and Febiger, 1972): 369-376 and *Congressional Record*, Serial No. 92-1 (Washington, D.C., U.S.A.: Government Printing Office, 1971).

Second Reference: Mohammad Shafii, Robert A. Lavelly, and Robert D. Jaffe, 'Meditation and the Prevention of Alcohol Abuse', *American Journal of Psychiatry* 132, (1975): 942-945.

CHART G3

Faster Recovery from Sleep Deprivation



Finding: Measurements showed that after 40 hours of sleep deprivation a group of subjects practising the Transcendental Meditation technique recovered much more quickly than a control group of individuals not practising the TM technique. Recovery was measured by duration of compensatory dreaming.

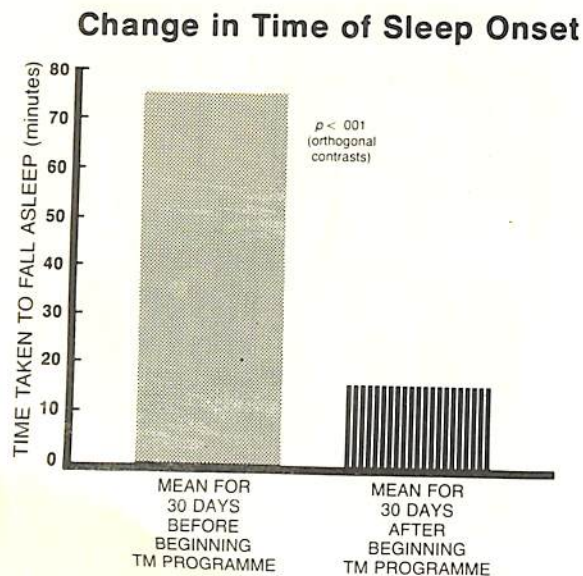
Interpretation: Sleep deprivation is a highly stressful experience, and compensatory dreaming is thought to be a form of stress release. The nervous system of individuals practising the TM technique becomes more resilient and less subject to long-term disruption by a stressful experience.* Faster recovery after exposure to stress of this type is valuable not only to people in everyday life but also to those in critical occupations, such as military, police, airline, and hospital personnel. This study also suggests that the TM technique may be helpful in the problem of jet lag.

* Ref. chart E4 — improved recovery from exertion; charts F2-F4 — increased autonomic stability; faster recovery from stressful stimuli; charts E1-E3, E5 — improved physiology stabilized.

Reference: Donald E. Miskiman, 'The Effect of the Transcendental Meditation Program on Compensatory Paradoxical Sleep' (University of Alberta, Edmonton, Alberta, Canada, 1972). Published in Volume I, *Scientific Research on the Transcendental Meditation Program: Collected Papers*.

CHART G5

Relief from Insomnia



Finding: The Transcendental Meditation programme significantly reduced the time taken for insomniacs to fall asleep. As a therapy against insomnia, the Transcendental Meditation programme was reported to be simple to administer, immediately effective, stable over time, and without unfavourable side effects.

Interpretation: The Transcendental Meditation technique relieves deep-seated stress from the nervous system on a direct physiological level. Consequently, it produces a wide range of beneficial effects without requiring specific attention to any one area. The effect seen here—greater regularity in the sleeping cycle—was subsequently shown to be stable throughout the first year of practice of the TM technique. The results of this study reflect a stabilization of basic biological rhythms, one aspect of a holistic stabilization of the physiology.*

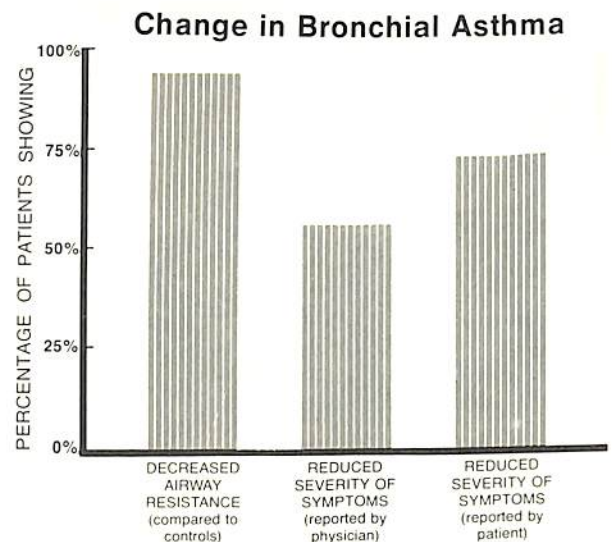
* Ref. charts E1, E2, E4—improved physiology stabilized; charts F1–F4 — increased autonomic stability; see also charts K6, K7 — improved psychological health.

First Reference: Donald E. Miskiman, 'The Treatment of Insomnia by the Transcendental Meditation Program' (University of Alberta, Edmonton, Alberta, Canada, 1972). Published in Volume I, *Scientific Research on the Transcendental Meditation Program: Collected Papers*.

Second Reference: Donald E. Miskiman, 'Long-Term Effects of the Transcendental Meditation Program on the Treatment of Insomnia' (University of Alberta, Edmonton, Alberta, Canada, 1975). Published in Volume I, *Scientific Research on the Transcendental Meditation Program: Collected Papers*.

CHART G7

Beneficial Effects on Bronchial Asthma



Finding: After beginning the practice of the Transcendental Meditation technique 94 per cent of a group of asthmatic patients showed improvement as determined by the physiological measurement of airway resistance. Fifty-five per cent of the asthmatic patients showed improvement as reported by their personal physicians, and 74 per cent showed improvement as reported by the patients themselves.

Interpretation: These results indicate that the Transcendental Meditation programme is beneficial for patients with bronchial asthma. Bronchial asthma is one of a group of diseases the severity of which has been consistently correlated with the level of psychological stress of the individual. By systematically relieving stress,* the Transcendental Meditation programme promises to be an effective new adjunct to therapy for this and other psychosomatic diseases.

* Ref. chart B2 — biochemistry of reduced stress; chart E3 — increased ease of breathing; charts F2–F4 — resistance to stress.

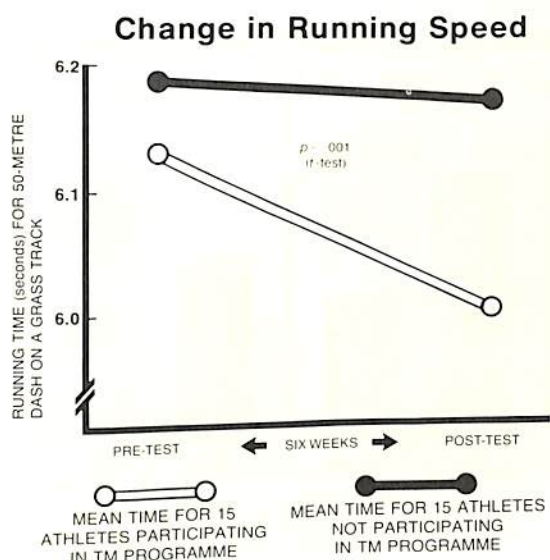
First Reference: Ronald W. Honsberger and Archie F. Wilson, 'The Effect of Transcendental Meditation upon Bronchial Asthma', *Clinical Research* 21, no. 2 (U.S.A.: 1973): 278.

Second Reference: Ronald W. Honsberger and Archie F. Wilson, 'Transcendental Meditation in Treating Asthma', *Respiratory Therapy: The Journal of Inhalation Technology* 3, no. 6 (U.S.A.: 1973): 79–80.

Third Reference: Archie F. Wilson, Ronald W. Honsberger, J.T. Chiu, and H.S. Novey, 'Transcendental Meditation and Asthma', *Respiration* 32 (U.S.A.: 1975): 74–80.

Fourth Reference: Paul W. Corey, 'Airway Conductance and Oxygen Consumption Changes Associated with Practice of the Transcendental Meditation Technique' (University of Colorado Medical Center, Denver, Colorado, U.S.A., 1974). Published in Volume I, *Scientific Research on the Transcendental Meditation Program: Collected Papers*.

Improved Athletic Performance Running Speed



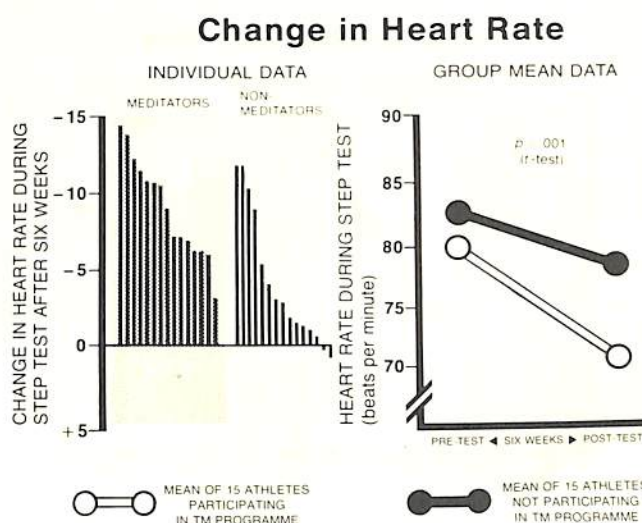
Finding: Athletes were tested on running speed for the 50-metre dash before and after six weeks of general pre-season training. Athletes instructed in the Transcendental Meditation technique at the beginning of the six-week period improved their running times by 0.13 seconds, whereas control subjects improved by only 0.03 seconds over the same period.

Interpretation: This result indicates that the Transcendental Meditation programme promotes the holistic development of mind-body co-ordination (charts I3, I5), bringing about faster reactions (chart I1) along with improved metabolic efficiency (charts A1-A3, A11, B1, B3, E1-E3, H4, H5), strength, and integration (charts D3-D7, K1, K8, K20).

Reference: M. Kesav Reddy, A. Jhansi Lakshmi Bai, and V. Raghavender Rao, 'The Effects of the Transcendental Meditation Program on Athletic Performance' (Lal Bahadar Stadium, Hyderabad, India, 1974). Published in Volume I, *Scientific Research on the Transcendental Meditation Program: Collected Papers*.

CHART H4

Improved Physiology of Athletes Cardiovascular Efficiency



Finding: The heart rate of athletes was measured during a standardized physical activity — the step test. After six weeks of general pre-season training along with the Transcendental Meditation programme, athletes practising the TM technique showed a significantly lower heart rate following vigorous activity than did the control subjects.

Interpretation: This finding carries important implications for all athletic training programmes, for it suggests that athletes practising the Transcendental Meditation technique respond more efficiently to standard training programmes than do athletes not practising the technique. This indicates that the Transcendental Meditation programme improves physiological adaptability* as well as physiological stability.†

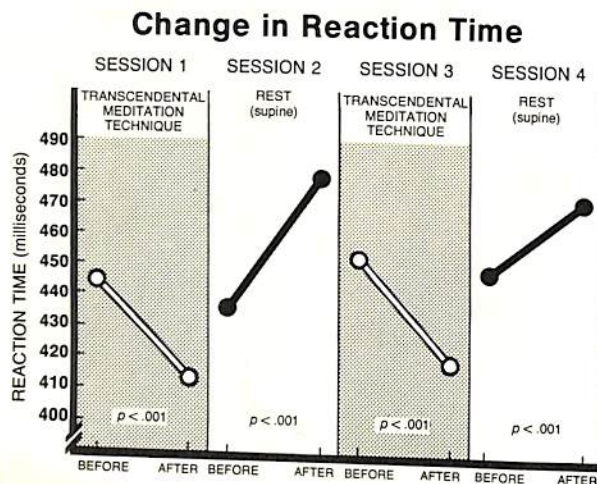
* Ref. charts E4 — improved recovery from exertion; charts F2-F4 — effective interaction with the environment; charts K1, K3, K10, L1 — increased flexibility.

† Ref. charts E1-E3, E5 — improved physiology stabilized; charts F1-F4 — increased autonomic stability; charts K2, K3 — greater emotional stability and increased inner control.

Reference: M. Kesav Reddy, A. Jhansi Lakshmi Bai, and V. Raghavender Rao, 'The Effects of the Transcendental Meditation Program on Athletic Performance' (Lal Bahadar Stadium, Hyderabad, India, 1974). Published in Volume I, *Scientific Research on the Transcendental Meditation Program: Collected Papers*.

CHART I1

Faster Reactions



Finding: Twenty-five subjects were measured over four different sessions of either practising the Transcendental Meditation technique or relaxing. The Transcendental Meditation technique was consistently found to speed up reactions, whereas resting in a supine position resulted in a slowing of reactions.

Interpretation: The Transcendental Meditation technique speeds up reactions, indicating increased alertness, improved co-ordination of mind and body, and improved efficiency in perception and performance. This experiment also shows that the TM technique results in significantly more freshness and alertness than is achieved by merely lying down.* The state produced by the TM technique is a superior form of coherent deep rest.†

* Ref. charts K3, K21 — increased liveliness and energy.

† Ref. charts A1–A11, B1, C1–C4, E1, E2 — physiological deep rest; charts D3, D5, D10 — increased brain wave coherence.

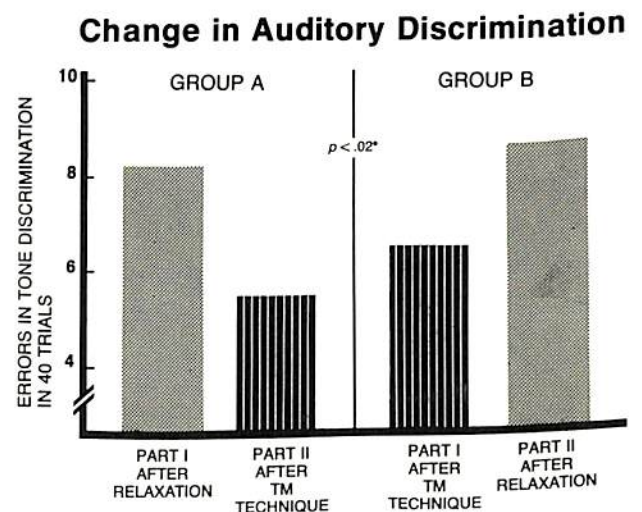
First Reference: David W. Orme-Johnson, David Kolb, and J. Russell Hebert, 'An Experimental Analysis of the Effects of the Transcendental Meditation Technique on Reaction Time' (Maharishi International University, Fairfield, Iowa, U.S.A., 1973). Published in Volume I, *Scientific Research on the Transcendental Meditation Program: Collected Papers*.

Second Reference: Robert Shaw and David Kolb, 'Reaction Time Following the Transcendental Meditation Technique' (University of Texas at Austin, Austin, Texas, U.S.A., 1971). Published in Volume I, *Scientific Research on the Transcendental Meditation Program: Collected Papers*.

Third Reference: Stuart Appelle and Lawrence Oswald, 'Simple Reaction Time as a Function of Alertness and Prior Mental Activity', *Perceptual and Motor Skills* 38 (U.S.A.: 1974): 1263–1268.

CHART I2

Increased Perceptual Ability



* Analysis of variance—meditation vs. relaxation.

Finding: The ability of individuals participating in the TM programme to discriminate small differences in the length of auditory tones was significantly better ($p < .02$) after practising the Transcendental Meditation technique than after simply sitting with eyes closed. Experimental group A relaxed with eyes closed first, then began the TM technique. Experimental group B first practised the TM technique, then relaxed with eyes closed. In both cases performance immediately following the Transcendental Meditation technique was superior to that immediately following relaxation.

Interpretation: This indicates an increased refinement of perception following the TM technique and suggests that the deep rest produced by the technique reduces the 'noise' in the perceptual system, resulting in improved information-processing capabilities.* This conclusion is supported by the finding that reactions are also faster after the Transcendental Meditation technique than after simply lying down with eyes closed (chart I1). The Transcendental Meditation technique improves the 'signal-to-noise' ratio of the nervous system, resulting in more sensitive perceptions.

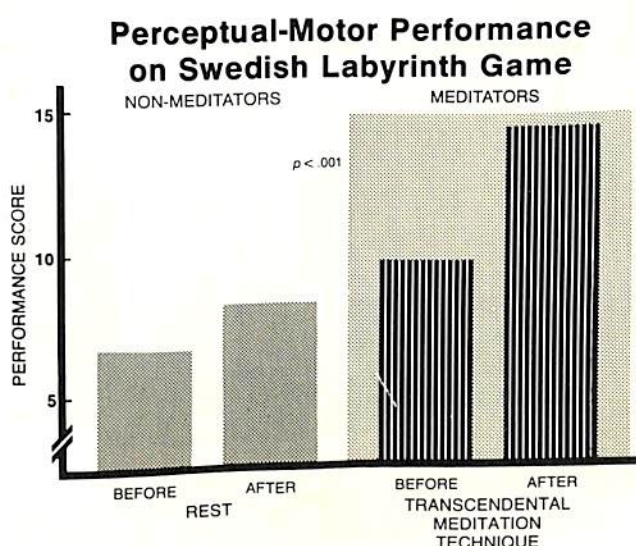
* Ref. charts E1, E2, H1, H2 — relaxation maintained in the midst of activity; charts D3, D10–D12 — increased brain wave synchrony and coherence; charts J1, J2, J6–J9 — increased intelligence and learning ability; charts F1–F4 — increased autonomic stability.

Reference: Michael Pirot, 'The Effects of the Transcendental Meditation Technique upon Auditory Discrimination' (University of Victoria, Victoria, British Columbia, Canada, 1973). Published in Volume I, *Scientific Research on the Transcendental Meditation Program: Collected Papers*.

TRANSCENDENTAL MEDITATION PROGRAMME

CHART 15

Superior Mind-Body Co-ordination



Finding: Twenty-one students who had practised the Transcendental Meditation technique for at least five months were compared with a control group of 15 subjects on a test of perceptual-motor co-ordination, the Swedish Labyrinth Game. Individuals participating in the TM programme scored higher than controls, and TM participants did better immediately after a period of the TM technique than did either control subjects ($p < .001$) or other TM participants ($p < .02$) after periods of ordinary rest.

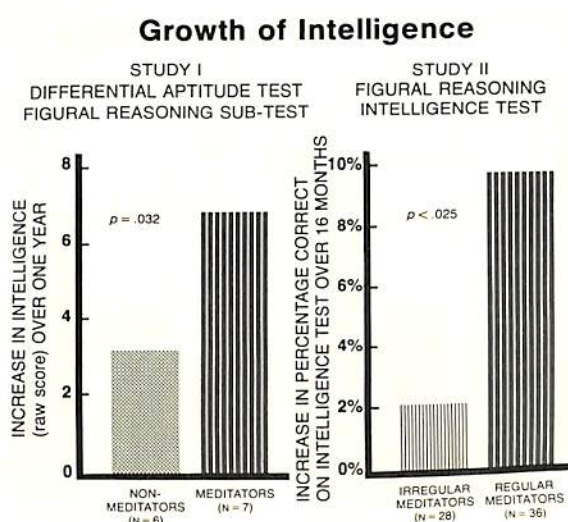
Interpretation: The test used (Swedish Labyrinth Game) requires good perception of direction, quick reactions, and quick and accurate motor responses. The growth of these abilities through practice of the Transcendental Meditation technique indicates improved mind-body co-ordination. This is another sign of the development of the physiological basis of a higher state of consciousness, in which dynamic activity co-exists with deep rest.*

* Ref. charts D3, E1, E2, E5, H1-H4—stabilized physiology in activity; charts K1, K8, K10, K24—increased self-actualization.

Reference: Andrew Rimol, 'The Transcendental Meditation Technique and Its Effects on Sensory-Motor Performance' (Princeton University, Princeton, New Jersey, U.S.A., 1974). Published in Volume I, *Scientific Research on the Transcendental Meditation Program: Collected Papers*.

CHART J1

Increased Intelligence Growth Rate



Finding: The results of an initial study showed greater increases in intelligence among high school students practising the TM technique than among control students. These results were confirmed in a second study that indicated that a group of university students and adults who practised the Transcendental Meditation technique regularly ($N=36$) increased significantly more in intelligence than those whose practice was irregular ($N=28$) over the 16-month period after they began the Transcendental Meditation technique ($p < .025$).

Interpretation: These findings indicate that the Transcendental Meditation programme increases general fluid intelligence, which enables the individual to respond to new situations with greater adaptability, creativity, and comprehension.* After the age when intelligence growth is expected to reach a plateau, individuals participating in the TM programme continue to grow in greater degrees of creative intelligence.

* Ref. charts D11, D12 — brain wave coherence correlated with creativity.

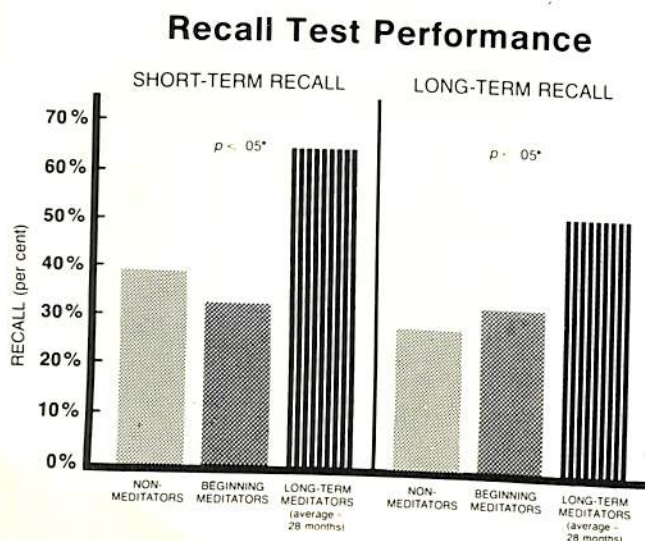
First Reference: André S. Tjoa, 'Some Evidence that the Transcendental Meditation Program Increases Intelligence and Reduces Neuroticism as Measured by Psychological Tests' (G.I.T.P., Verdistraat 6, Amsterdam, the Netherlands, 1972). Published in Volume I, *Scientific Research on the Transcendental Meditation Program: Collected Papers*.

Second Reference: André S. Tjoa, 'Meditation, Neuroticism and Intelligence: A Follow Up', *Gedrag: Tijdschrift voor Psychologie* 3 (the Netherlands: 1975): 167-182.

Third Reference: André S. Tjoa, 'Increased Intelligence and Reduced Neuroticism through the Transcendental Meditation Program' (G.I.T.P., Verdistraat 6, Amsterdam, the Netherlands, 1972). Published in Volume I, *Scientific Research on the Transcendental Meditation Program: Collected Papers*.

CHART J2

Increased Learning Ability



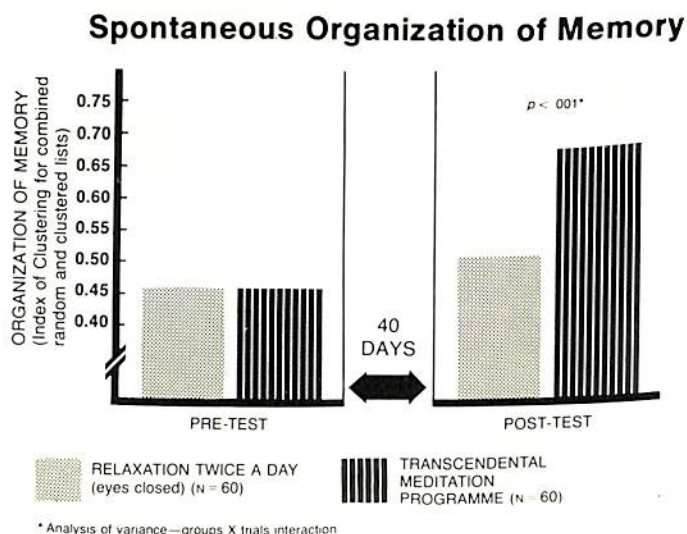
Finding: Subjects who had practised the Transcendental Meditation technique an average of 28 months performed better than subjects not practising the TM technique on short- and long-term recall tests as well as on tests of paired-associate learning. In addition, a trend towards progressive improvement in the long-term recall ability of individuals participating in the TM programme was found in comparing controls, beginning TM programme participants, and long-term TM programme participants ($p < .01$, Kruskal-Wallis Trend Test).

Interpretation: These results indicate that the Transcendental Meditation programme directly improves the ability to learn. This finding is even more significant in view of the common belief among psychologists that basic learning ability cannot be improved beyond late adolescence. This suggests that the holistic changes brought about by the practice of the Transcendental Meditation technique account for the development of learning ability (charts C1, D4, I2, I4).

First Reference: Allan I. Abrams, 'Paired-Associate Learning and Recall: A Pilot Study of the Transcendental Meditation Program' (University of California Berkeley, California, U.S.A., 1972). Published in Volume I, *Scientific Research on the Transcendental Meditation Program: Collected Papers*.

Second Reference: Donald E. Miskiman, 'Performance on a Learning Task by Subjects Who Practice the Transcendental Meditation Technique' (University of Alberta, Edmonton, Alberta, Canada, 1972). Published in Volume I, *Scientific Research on the Transcendental Meditation Program: Collected Papers*.

CHART J3

Increased Orderliness of Thinking
Improved Memory

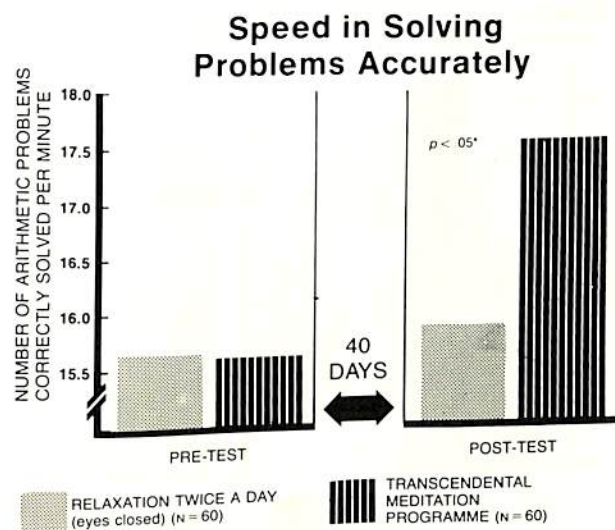
Finding: After the first 40 days of the Transcendental Meditation programme, individuals practising the TM technique increased markedly in their tendency to spontaneously organize memorized material in their minds (as measured by the Index of Clustering in recall). Members of the control group, who relaxed twice daily by sitting with eyes closed, did not change significantly.

Interpretation: This study shows one aspect of the basic tendency of the Transcendental Meditation technique to improve the orderliness of the mind. The ability of the TM technique to systematically develop clarity of thought demonstrates that the neurophysiological changes associated with the practice of the TM technique, such as increased balance of activity in the cerebral hemispheres (charts D3, D4, D6, D7, D10), are in a highly desirable direction.

Reference: Donald E. Miskiman, 'The Effect of the Transcendental Meditation Program on the Organization of Thinking and Recall (Secondary Organization)' (University of Alberta, Edmonton, Alberta, Canada, 1973). Published in Volume I, *Scientific Research on the Transcendental Meditation Program: Collected Papers*.

CHART J4

Increased Orderliness of Thinking Problem Solving



Finding: Individuals practising the Transcendental Meditation technique significantly increased their speed in solving arithmetic problems accurately. Two facts were found:

1. The efficiency of solving arithmetic problems increased in individuals who practised the TM technique 20 minutes twice daily, compared with members of a control group who relaxed for an equivalent period of time twice daily.
2. A separate test of memory (chart J5) showed that improved organization of memory continued to stabilize even while those participating in the TM programme were engaged in problem solving.

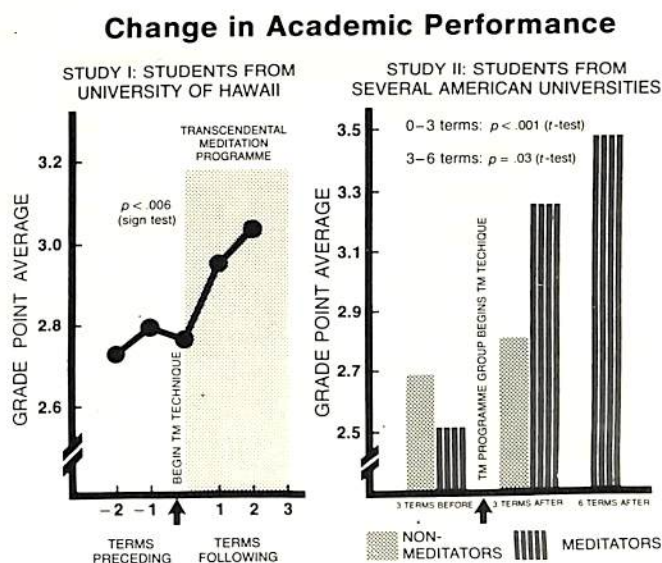
Interpretation: These results show that the Transcendental Meditation programme increases the clarity and efficiency of conscious thought processes and at the same time improves the unconscious processes, leading to spontaneous and purposeful organization of thought. More orderly, purposeful, intelligent thought indicates unfoldment of full mental potential.*

* Ref. charts D3–D7, D10—increased orderliness of brain waves; charts K1, K8, K10, K24—increased self-actualization; charts L1, L2—increased creativity.

Reference: Donald E. Miskiman, 'The Effect of the Transcendental Meditation Program on the Organization of Thinking and Recall (Secondary Organization)' (University of Alberta, Edmonton, Alberta, Canada, 1973). Published in Volume I, *Scientific Research on the Transcendental Meditation Program: Collected Papers*.

CHART J6

Improved Academic Performance University Students



Finding: In two studies academic performance, as measured by grade point average (GPA), was shown to improve sharply after students began the Transcendental Meditation technique. Study I is a retrospective study of students at the University of Hawaii. The GPA for a minimum of two terms before the students began the TM programme was compared to their GPA for a minimum of one term after they began the programme. Study II is a retrospective study comparing individuals participating in the TM programme with a matched control group of non-participants.

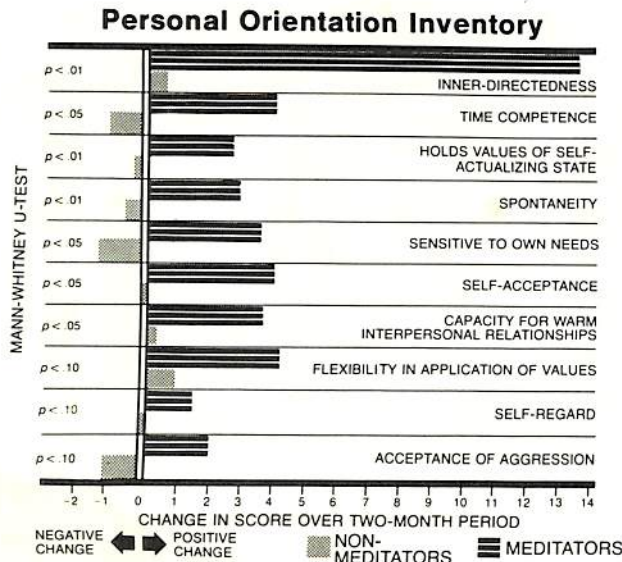
Interpretation: The generalized improvement in neurophysiological and psychological functioning (charts D3–D5, I2, I4, K3) caused by the Transcendental Meditation technique naturally brings about improvement in a holistic measure of mental effectiveness, the ability to succeed in academic studies. Thus, the TM programme is found to bring about a systematic development of creative intelligence.

First Reference: Study I: Roy W. Collier, 'The Effect of Transcendental Meditation upon University Academic Attainment' (University of Hawaii, Honolulu, Hawaii, U.S.A., 1973). Published in Volume I, *Scientific Research on the Transcendental Meditation Program: Collected Papers*.

Second Reference: Study II: Dennis P. Heaton and David W. Orme-Johnson, 'The Transcendental Meditation Program and Academic Achievement' (Maharishi International University, Fairfield, Iowa, U.S.A., 1974). Published in Volume I, *Scientific Research on the Transcendental Meditation Program: Collected Papers*.

CHART K1

Development of Personality



Finding: Subjects practising the Transcendental Meditation technique, measured once prior to beginning the technique and again two months later, showed significant positive improvement in the following traits when compared with a matched control group of subjects not practising the TM technique: inner-directedness, time competence, self-actualization, spontaneity, sensitivity to one's needs, self-acceptance, and capacity for warm interpersonal relationships. The test used was the Personal Orientation Inventory (POI). Two independent studies also using the POI confirmed these results.

Interpretation: The POI was developed by Shostrom to measure Maslow's concept of self-actualization. Maslow defines self-actualization as a high level of maturity, health, and fulfilment (charts H1, H4, H5, G1, G4, K3); transcendence of deficiencies; a clearer, more efficient perception of reality (chart I4); more openness to experience; increased integration, wholeness, and unity of person (chart D7); increased spontaneity, expressiveness, aliveness; a real self; increased objectivity, detachment, transcendence of self; ability to fuse concreteness and abstractness; ability to love; a firm identity, increased autonomy, and resistance to enculturation (charts F1, F2). All the personality changes brought about by the Transcendental Meditation programme are clearly in the direction of what is generally recognized as the development of a healthy, self-actualized personality.

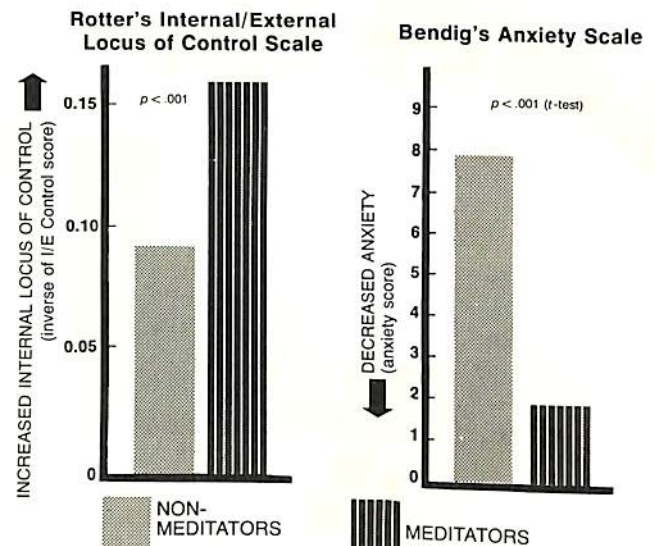
First Reference: Sanford Nidich, William Seeman, and Thomas Dreskin, 'Influence of Transcendental Meditation: A Replication', *Journal of Counseling Psychology* 20, no. 6 (U.S.A.: 1973): 565-566.

Second Reference: William Seeman, Sanford Nidich, and Thomas Banta, 'Influence of Transcendental Meditation on a Measure of Self-actualization', *Journal of Counseling Psychology* 19, no. 3 (U.S.A.: 1972): 184-187.

Third Reference: Larry A. Hjelle, 'Transcendental Meditation and Psychological Health', *Perceptual and Motor Skills* 39 (U.S.A.: 1974): 623-628.

CHART K2

Increased Inner Control, Decreased Anxiety



Finding: Compared with a control group of individuals not practising the Transcendental Meditation technique, subjects practising the TM technique demonstrated a more internal locus of control, as measured by Rotter's Internal/ External (IE) Locus of Control Scale, and were less anxious, as measured by Bendig's Anxiety Scale.

Interpretation: Internal control as measured by Rotter's scale indicates the development of broader comprehension—insight into the causal connection between one's behaviour and the environment and foresight into the consequences of one's behaviour. High internal locus of control has been associated with psychological adaptability,* low anxiety,† and the ability to effectively extract and make use of information from a complex environment.‡ Since the TM technique stabilizes the internal sense of self and improves the integration and thereby the effectiveness of thought and action, the individual practising the TM technique naturally feels a greater sense of control over his life.

* Ref. charts A4, A5, H5 — increased respiratory flexibility; chart H3 — increased agility; chart H4 — increased cardiovascular efficiency.

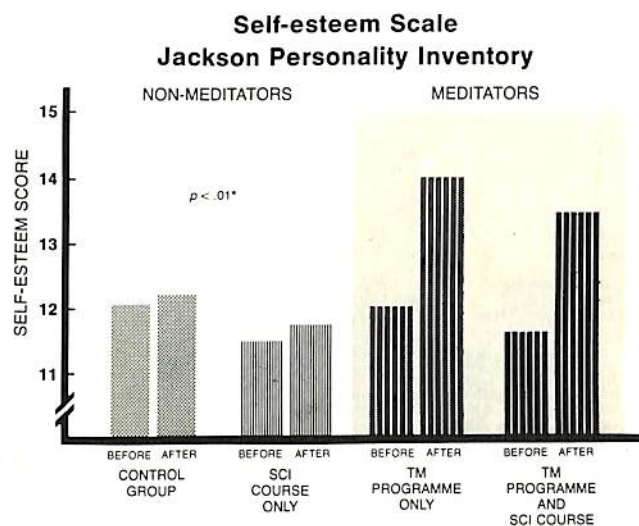
† Ref. charts B1, B2, B4, C1, C4, E3, G7, F1-F4 — physiological correlates of reduced anxiety.

‡ Ref. charts L1, L2 — increased creativity; chart M1 — increased productivity; chart I4 — increased ability to focus attention without being distracted by the environment.

Reference: Larry A. Hjelle, 'Transcendental Meditation and Psychological Health', *Perceptual and Motor Skills* 39 (U.S.A.: 1974): 623-628.

CHART K18

Increased Self-esteem in High School Students



*Analysis of variance—meditation—non-meditation x pre-post interaction.

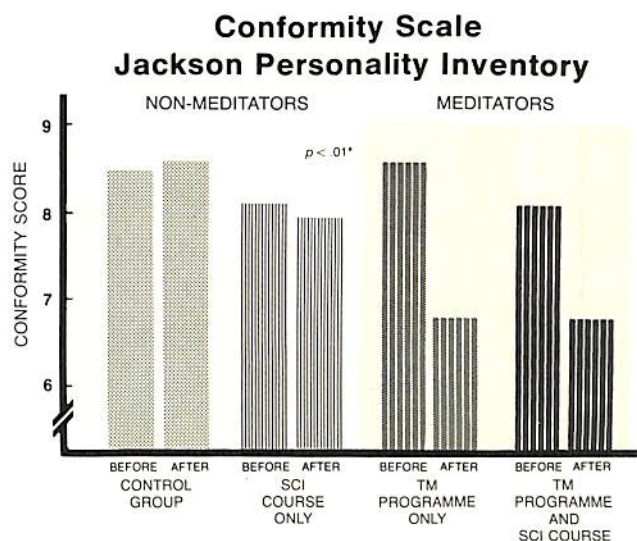
Finding: In a study of 80 students at a public high school in Canada, students who practised the Transcendental Meditation technique showed a significant increase in self-esteem ($p < .01$) after 14 weeks of the TM programme, as measured by the Jackson Personality Inventory, whereas the control group did not. The increase in self-esteem was shown to be primarily due to the effects of the practice of the TM technique itself, and not simply to intellectual involvement with the theory underlying it, as presented in an accompanying Science of Creative Intelligence course.

Interpretation: At an age when many students are experiencing fluctuations in mood and self-regard, students practising the TM technique can gain and maintain a high level of self-esteem. Increased self-esteem may be considered to result from the substantial gains in mental and physical performance that the TM programme provides (charts H1–H5, I4, I5, J2, J4, J6, J8, J9) together with the programme's direct effects on the personality, especially on the tendency to perceive the locus of control of one's life within oneself (chart K2).

Reference: Howard Shecter, 'The Transcendental Meditation Program in the Classroom: A Psychological Evaluation' (York University, North York, Ontario, Canada, 1975). Published in Volume I, *Scientific Research on the Transcendental Meditation Program: Collected Papers*.

CHART K20

Increased Individuality in High School Students



*Analysis of variance—meditation—non-meditation x pre-post interaction.

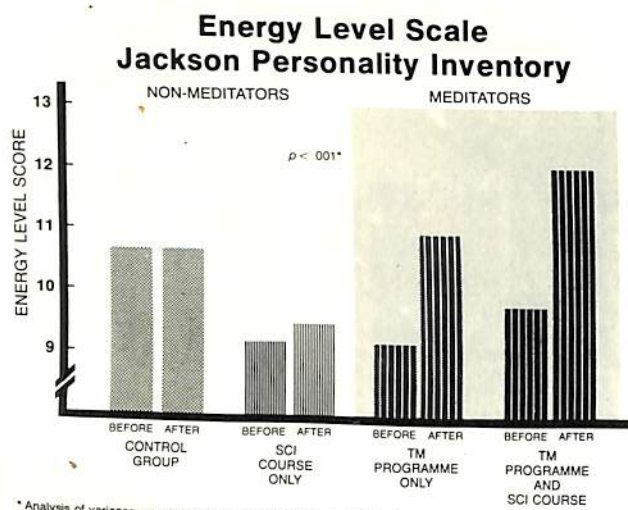
Finding: In a study involving 80 students at a public high school in Canada, students who practised the Transcendental Meditation technique showed a significant decrease in conformity ($p < .01$) after 14 weeks of the TM programme, as measured by the Jackson Personality Inventory. The control group did not change significantly. The decrease in conformity was shown to be primarily due to the effects of the practice of the TM technique itself, and not simply to intellectual involvement with the theory underlying it, as presented in an accompanying Science of Creative Intelligence course.

Interpretation: Conformity as measured by the Jackson Personality Inventory means a restriction of individual expression due to excessive desire to belong to a group. This trait is common in high school age students. It may be inferred from this study and others that the Transcendental Meditation programme increases the expression of individuality (decreased conformity) on the basis of improved mental and physical performance (charts H1–H5, I5, J2, J4, J8, J9) and an increased sense of internal direction (charts I4, K2), along with lower anxiety (charts K2, K4, K9, K11–K17). It is interesting to note that the TM programme brings about increased individuality and leadership simultaneously with improved relationships with co-workers (chart M6) and increased interpersonal harmony in general (charts K1, K3, K10).

Reference: Howard Shecter, 'The Transcendental Meditation Program in the Classroom: A Psychological Evaluation' (York University, North York, Ontario, Canada, 1975). Published in Volume I, *Scientific Research on the Transcendental Meditation Program: Collected Papers*.

CHART K21

Increased Energy Level in High School Students



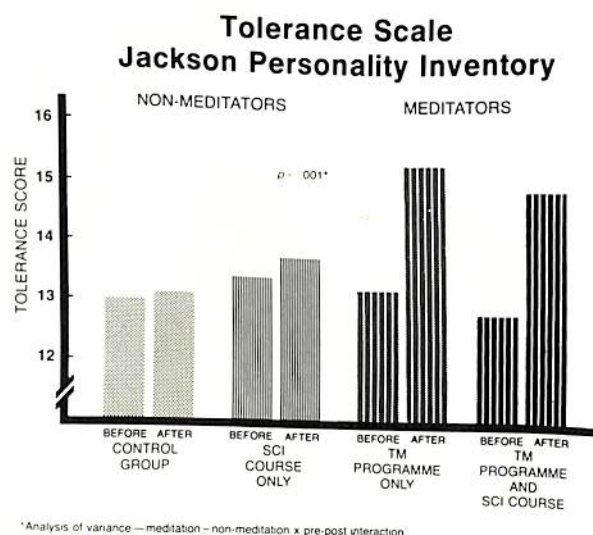
Finding: In a study involving 80 students in a Canadian public high school, students who practised the Transcendental Meditation technique showed a significant increase in energy level ($p < .001$) after 14 weeks of the TM programme, as measured by the Jackson Personality Inventory, whereas the control group showed no change. It was shown that increased energy level was primarily due to the effects of the practice of the TM technique itself, and not simply to intellectual involvement with the theory underlying it, as presented in an accompanying Science of Creative Intelligence course.

Interpretation: Improved psychological energy level in any individual is the consequence of better physiological and neurophysiological functioning (charts D1–D12, E1–E5), which leads to finer perceptions and faster reactions (charts I1–I5). Whereas dullness and lack of interest are a problem in many high school classes, students practising the Transcendental Meditation technique become sharper, brighter, and livelier (chart J9).

Reference: Howard Shecter, 'The Transcendental Meditation Program in the Classroom: A Psychological Evaluation' (York University, North York, Ontario, Canada, 1975). Published in Volume I, *Scientific Research on the Transcendental Meditation Program: Collected Papers*.

CHART K22

Increased Tolerance in High School Students



Finding: In a study of 80 students at a public high school in Canada, students who practised the Transcendental Meditation technique showed a significant increase in tolerance ($p < .001$) after 14 weeks of the TM programme, as measured by the Jackson Personality Inventory, whereas the control group did not. The increase in tolerance was shown to be primarily due to the effects of the practice of the TM technique itself, and not simply to intellectual involvement with the theory underlying it, as presented in an accompanying Science of Creative Intelligence course.

Interpretation: This finding has extremely important implications for the modern urban high school, which is attended by students from many different ethnic and social backgrounds. Increased tolerance may be seen as the natural result of the greater self-confidence, warmth, and positivity shown to be developed by the TM programme (charts K1–K14, K18). On a deeper level, increased tolerance reflects an expanded area of identification coming from deeper experience of the self.* The Transcendental Meditation programme promises secondary education a means to develop this quality in its students as part of the regular curriculum.

* Ref. chart I4—stable internal frame of reference; charts A11, D11, D12—clarity of experience of transcendental consciousness.

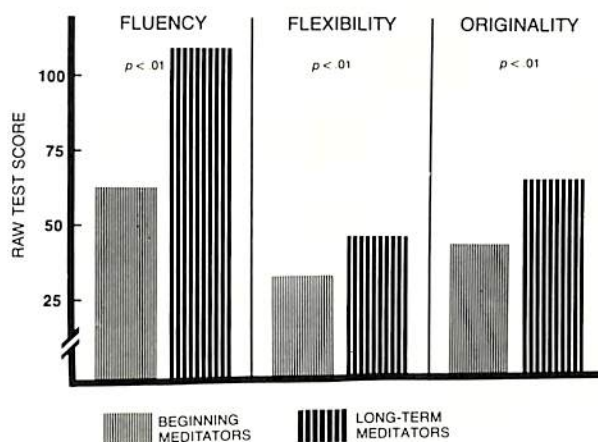
Reference: Howard Shecter, 'The Transcendental Meditation Program in the Classroom: A Psychological Evaluation' (York University, North York, Ontario, Canada, 1975). Published in Volume I, *Scientific Research on the Transcendental Meditation Program: Collected Papers*.

TRANSCENDENTAL MEDITATION PROGRAMME

CHART L1

Increased Creativity

**Torrance Test of Creative Thinking
Three Aspects of Creativity**



Finding: The Torrance Test of Creative Thinking (TTCT), Verbal Form A, was used to compare 44 subjects practising the Transcendental Meditation technique for an average of 18 months with 41 subjects who had just learned the Transcendental Meditation technique. The two groups were equivalent in age, sex, education, and income level. The long-term meditators scored significantly higher ($p < .01$) on all three scales of the TTCT — Fluency, Flexibility, and Originality — indicating that practice of the Transcendental Meditation technique increases creativity.

Interpretation: The TTCT was developed to measure the type of creative thinking process described by eminent scientific researchers, inventors, and creative writers. Psychologists such as Carl Rogers and Abraham Maslow have associated this type of creativity with increased self-actualization, which has also been found by independent studies (charts K1, K8, K10, K24) to result from the Transcendental Meditation programme. These findings give objective validation to the statement that the Transcendental Meditation programme systematically develops creative intelligence by providing a means to directly experience the source of creativity in the mind. The aspects of creativity measured here — fluency, flexibility, and originality — may be associated with integration (charts D2–D7, D10–D12), adaptability (charts F1–F4, H3, H4), and growth (charts I3, I4, J1, J6, J9), three of the fundamentals of progress* that are enhanced by the Transcendental Meditation technique.

* Fundamentals of Progress — stability, adaptability, integration, purification, and growth.

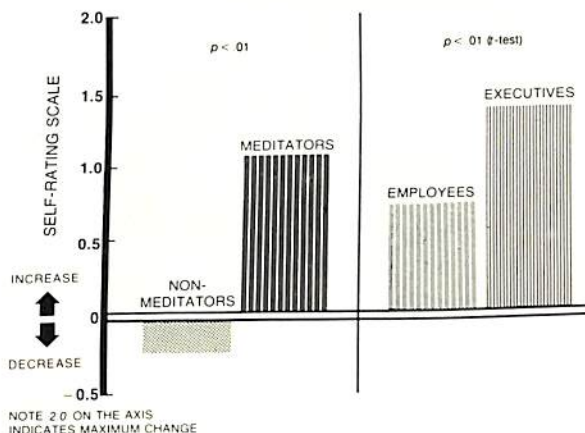
Reference: Michael J. MacCallum, 'The Transcendental Meditation Program and Creativity' (California State University, Long Beach, California, U.S.A., 1974). Published in Volume I, *Scientific Research on the Transcendental Meditation Program: Collected Papers*.

CHART M3

Improved Job Performance

Change in Job Performance

COMPARING (1) NON-MEDITATORS WITH MEDITATORS;
(2) EMPLOYEES WITH HIGH LEVEL EXECUTIVES,
BOTH PARTICIPATING IN THE TM PROGRAMME



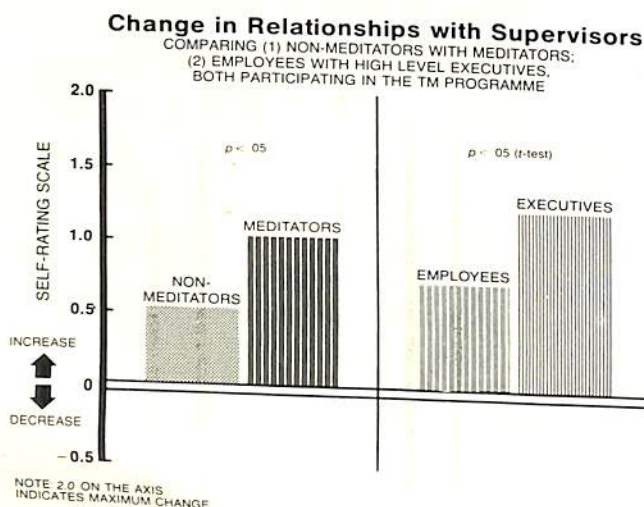
Finding: At all levels of organization those practising the TM technique showed a significant increase in job performance compared with non-meditating controls. Executives at higher levels of responsibility practising the technique showed a comparatively greater increase in performance than employees at less responsible levels.

Interpretation: Individuals at all levels of organization benefit from the development of creative intelligence through practice of the Transcendental Meditation technique.* Executives at higher levels of responsibility, where greater creativity is demanded, find an even greater application for increased creative intelligence.

* Ref. charts D11, D12 — brain wave coherence correlated with creativity and experience of transcendental consciousness; charts L1, L2 — increased creativity; chart I4 — broader comprehension and ability to focus attention.

Reference: David R. Frew, 'Transcendental Meditation and Productivity', *Academy of Management Journal* 17, no. 2 (U.S.A.: 1974): 362–368.

CHART M5

Improved Relationships
with Supervisors

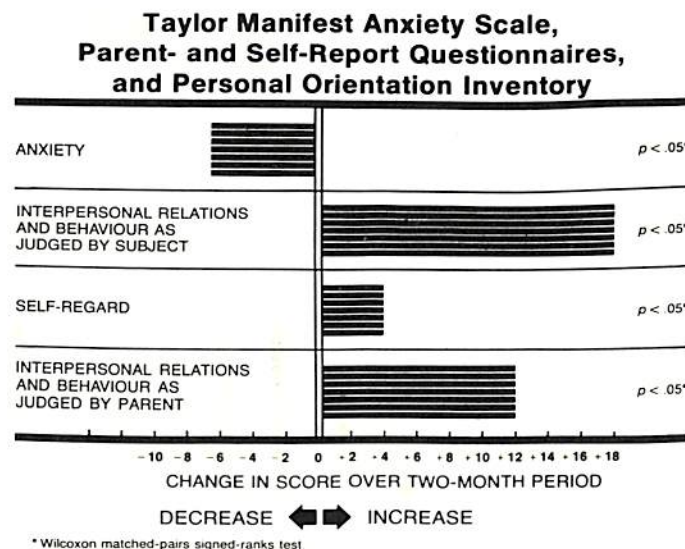
Finding: This study showed that the Transcendental Meditation programme was effective in significantly improving employees' working relationships with their supervisors. Improvement was found to be comparatively greater for those at higher levels of organization.

Interpretation: The Transcendental Meditation programme leads to more rewarding and productive interpersonal relationships in business by improving each individual's ability to do his job effectively and amiably while simultaneously increasing his stability and warmth of personality.*

* Ref. charts E1, E2, E4, H4 — improved physiology stabilized; charts F1–F4 — increased autonomic stability, a neurophysiological correlate of increased behavioural stability; chart K3 — improved psychology: increased emotional stability along with increased sociability, liveliness, friendliness, and good humour.

Reference: David R. Frew, 'Transcendental Meditation and Productivity', *Academy of Management Journal* 17, no. 2 (U.S.A.: 1974): 362–368.

CHART N10

Rehabilitation of Juvenile Offenders
Improved Psychology and Social Behaviour

Finding: In this study a group of five juvenile offenders under court jurisdiction were taught the Transcendental Meditation technique and were then studied over a two-month period. Variables measured were anxiety (Taylor Manifest Anxiety Scale), self-actualization (Personal Orientation Inventory [POI]), and drug usage and acceptable social behaviour (court reports and parent- and self-report questionnaires). Statistically significant improvements were recorded in level of anxiety ($p < .05$), self-regard ($p < .05$), and behaviour as judged by subject ($p < .05$) and parent ($p < .05$). The group demonstrated a trend towards increased self-actualization as measured by six scales of the POI.

Interpretation: It is commonly thought that law breakers in general, and juvenile offenders in particular, are in large part products of their environment. This study shows that the Transcendental Meditation programme, by strengthening the inner basis of the personality (chart K2) and increasing the capacity for creativity* and enjoyment (chart K8), can truly rehabilitate the juvenile offender, thereby developing his capacity to deal successfully with his environment (charts F2–F4).

* Ref. charts L1, L2 — increased creativity; charts D11, D12 — high level of creativity correlated with high levels of orderliness in brain wave activity.

Reference: John P. Childs, 'The Use of the Transcendental Meditation Program as Therapy with Juvenile Offenders' (Paper extracted from Ed.D. thesis, Department of Educational Psychology and Guidance, University of Tennessee, Knoxville, Tennessee, U.S.A., 1973). Published in Volume I, *Scientific Research on the Transcendental Meditation Program: Collected Papers*.

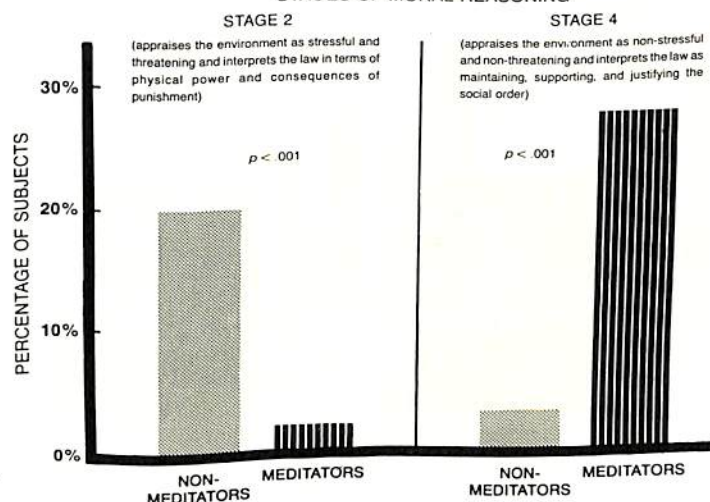
TRANSCENDENTAL MEDITATION PROGRAMME

CHART N11

Increased Moral Reasoning

Kohlberg's Moral Judgment Interview

STAGES OF MORAL REASONING



Finding: Those practising the Transcendental Meditation technique ($N=96$) were found to score significantly higher on a test of moral reasoning — Kohlberg's Moral Judgment Interview — than control subjects ($N=30$) not practising the technique. Compared to controls a significantly larger percentage of individuals practising the TM technique showed higher-level moral reasoning based on appraisal of the environment as non-stressful and non-threatening and interpretation of the law as maintaining, supporting, and justifying the social order ($p < .01$). Also, the percentage of individuals practising the TM technique showing lower-level moral reasoning was significantly smaller than the same percentage for controls ($p < .001$). Lower-level moral reasoning is based on appraisal of the environment as stressful and threatening and interpretation of the law in terms of physical power and consequences of punishment.

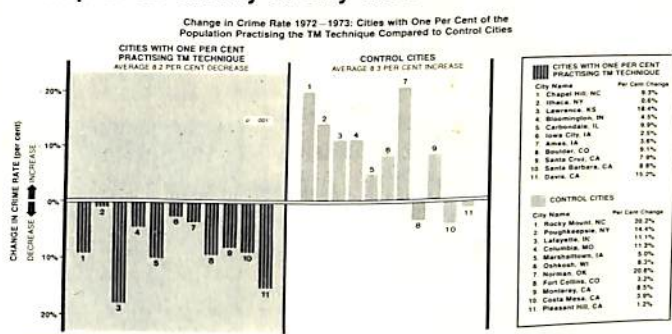
Interpretation: Since the Transcendental Meditation programme does not include any particular philosophy or changes in life style, it appears that the development in moral reasoning produced by the TM programme is a natural consequence of increased neurophysiological, physiological, psycho-motor, and psychological orderliness, integration, and stability (charts A10, A11, B1, D4–D6, D10–D12, F1, F2, H2, I5, J3, K2, K8). Because self-sufficiency and autonomic stability develop through the Transcendental Meditation programme, moral dilemmas can be appraised as non-stressful and non-threatening, thus allowing the meditator to exhibit higher-level moral reasoning based on respect for the underlying moral values inherent in codes of authority.

Reference: Sanford I. Nidich, 'A Study of the Relationship of the Transcendental Meditation Program to Kohlberg's Stages of Moral Reasoning' (Paper extracted from Ed.D. thesis, Department of Learning and Development, College of Education, University of Cincinnati, Cincinnati, Ohio, U.S.A., 1975). Published in Volume I, *Scientific Research on the Transcendental Meditation Program: Collected Papers*.

CHART O1

Indications of the Age of Enlightenment The Maharishi Effect

Improved Quality of City Life: Reduced Crime Rate



Finding: A retrospective study compared 11 cities in which at least one per cent of the population had learned the Transcendental Meditation technique by the end of 1972 to 11 matched control cities with relatively few participants in the TM programme, but otherwise comparable in population, location, and crime statistics. Eight of the 11 control cities increased in number of serious crimes from 1972 to 1973 with an average change of +8.3 per cent. (For the nation as a whole, the average increase in city crime that year was six per cent according to the FBI Uniform Crime Reports.) In contrast, the cities with one per cent of their population practising the TM technique decreased in crime rate by an average of 8.2 per cent, a relative decrease of 16.5 per cent when compared with the control group. This difference in change in crime rate between the two groups of cities was statistically significant ($p < .001$).

Interpretation: The TM technique is a mental procedure which produces a wide range of physiological* and psychological† benefits for the individual as well as improved relationships‡. However the primary effect of the TM technique is to develop higher consciousness in the individual.§ Individual consciousness is the basic unit of collective consciousness—family consciousness, community consciousness, city consciousness, provincial consciousness, national consciousness, and world consciousness. The present study has brought to light the improvements in city life caused by the improvement in the quality of city consciousness when the number of individuals in that city practising the TM technique rises to about one per cent. Increasing harmony and balance in the individual's behaviour naturally increases harmonious functioning balance in the life of the city. This shift towards harmonious functioning throughout society at the one per cent level has been called the Maharishi Effect in honour of Maharishi Mahesh Yogi who predicted this phenomenon in 1960. Over 700 cities in the world now have one per cent of the population participating in the TM programme and are enjoying the benefits of the Maharishi Effect. Global research on individual consciousness and world consciousness at MERU in co-operation with other institutions has begun to study additional variables expected to change as the Maharishi Effect influences all levels of collective consciousness, leading to the creation of an ideal society and the Age of Enlightenment.

* Ref. charts D10–D12, E1–E5, F1–F4, H4, H5, I1–I5 — improved physiology

† Ref. charts K1–K25, L1, L2, J3, J5 — improved psychology

‡ Ref. charts M5–M7 — improved relationships

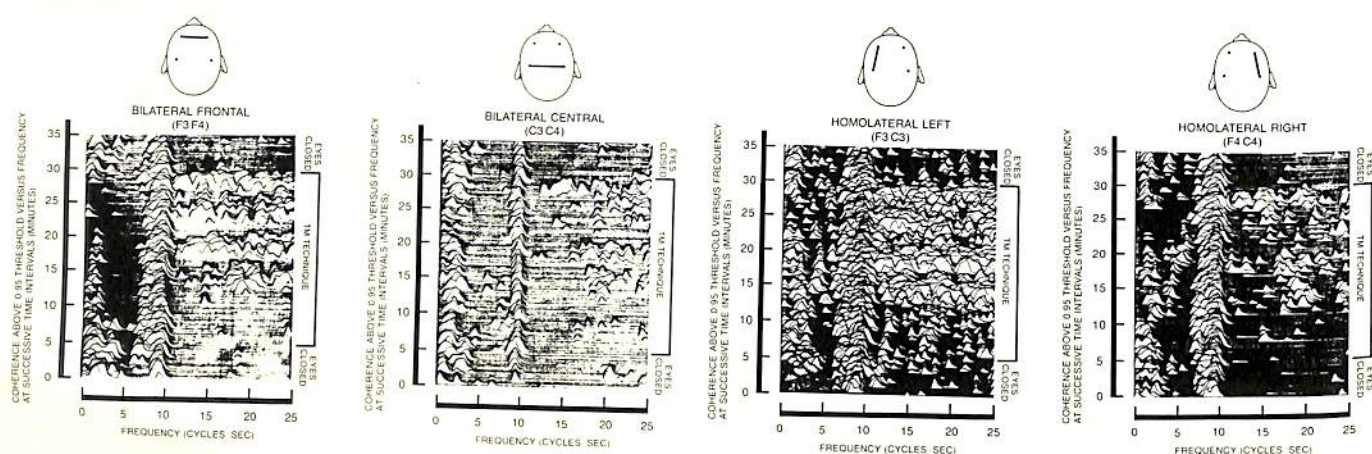
§ Ref. charts A11, D11, D12 — correlates of higher consciousness

Reference: Candace Borland and Garland Landrith III, 'Improved Quality of City Life: Decreased Crime Rate', MERU Report 7502, Department of Sociology, Centre for the Study of Higher States of Consciousness, Maharishi European Research University, Seelersberg, Switzerland, 1975.

CHART P1

Brain Wave Coherence and Cosmic Consciousness

COMPUTER GENERATED COHERENCE SPECTRAL ARRAYS (COSPARS) OF SUBJECT SHOWING STRONG INDICATIONS OF COSMIC CONSCIOUSNESS



Finding: The EEG in the frontal and central brain regions was studied in participants ($N=22$) in an Age of Enlightenment Governor Training Course conducted by Maharishi European Research University in Switzerland. The subjects showed varying degrees of development of cosmic consciousness or enlightenment assessed by the degree to which pure awareness was experienced throughout night sleep ('witnessing sleep').

Witnessing was positively correlated ($r=.64$, $p<.01$) with the total alpha (8–12 Hz) EEG coherence between the four electrode placements, and was less strongly but significantly correlated with coherence in the theta (4–8 Hz, $r=.41$) and beta (12–25 Hz, $r=.45$) frequency bands.

In addition, the clarity of pure awareness experienced during the Transcendental Meditation technique (clear experience of transcendental consciousness) was significantly correlated ($r=.64$, $p<.01$) with higher alpha coherence in the region of dominant coherence, although the region of dominant coherence differed greatly among subjects. The greater the number of brain regions in which high coherence occurred, the clearer the transcending ($p<.05$).

Subjects with the clearest experiences of transcendental consciousness also reported the strongest signs of stabilization of pure awareness ($r=.77$, $p<.001$).

Interpretation: Cosmic consciousness arises through the regular practice of the Transcendental Meditation technique which stabilizes pure awareness or transcendental consciousness. Pure awareness is at first only experienced during the Transcendental Meditation technique (e.g. see chart A11) but later is maintained throughout the cycle of waking, dreaming, and sleeping. It is an especially distinctive subjective experience during sleep (a phenomenon that has been termed 'witnessing sleep').

This experiment shows that as consciousness grows high

coherence develops in more regions of the brain until in cosmic consciousness high coherence is found in all regions (see figure above).

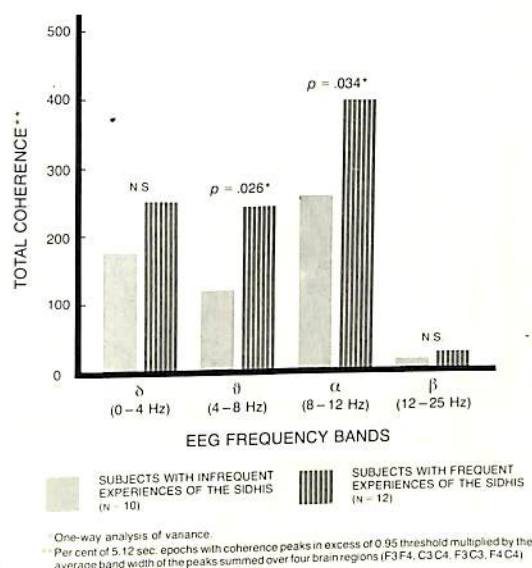
The abundance of EEG coherence in excess of the 0.95 threshold (0 = no coherence, 1 = maximum coherence) reflects the remarkably precise timing between spatially separated and anatomically distinct regions of the brain. There is experimental evidence that this high degree of linear coupling of the EEG is strongly related to the transfer of information between cerebral systems. As this highly ordered, zero entropy state in the brain evolves, the information exchange or flow of intelligence becomes unobstructed and the mind becomes perfectly coupled with the nervous system. In this state of perfect mind-body co-ordination thoughts meet with the full and harmonious co-operation of the body, resulting in powerful, fulfilling actions.

The psychophysiological development seen in this experiment is also shown by the rapid physiological and intellectual development in participants in the Transcendental Meditation programme observed in previous experiments (showing improved health, charts G1–G8, increased intellectual performance, J1–J9, and improved mind-body co-ordination, I1–I3, I5).

Reference: David W. Orme-Johnson, Geoffrey Clements, Christopher T. Haynes, and Kheiriddine Badaoui, 'Higher States of Consciousness: EEG Coherence, Creativity, and Experiences of the Siddhis', MERU Report 7701, Centre for the Study of Higher States of Consciousness, Maharishi European Research University, Seelisberg, Switzerland, 1977. Abstract in *Scientific Research on the Transcendental Meditation Program: Collected Papers*, Vol. 1, MERU Press.

CHART P2

Experiences of the Sidhis and Increased Brain Wave Coherence



Finding: The sidhis are performances of higher states of consciousness described in the yoga system of Patanjali, one of the six systems of Indian philosophy which elaborate the knowledge of the Vedas. Subjects who reported frequently experiencing some degree of the sidhis, e.g. the ability to know the past and future, knowledge of other minds, the ability to become invisible, 'passage through the sky' (reorientation of the physiology and some tendency to levitate), were found to have higher total EEG coherence during the Transcendental Meditation technique in the theta ($p = .026$) and alpha ($p = .034$) frequency bands than subjects who infrequently experienced the sidhis.

Subjects who frequently experience the sidhis reported clearer experience of transcending during the Transcendental Meditation technique ($r = .75$, $p < .001$) and experienced greater stabilization of pure awareness ($r = .67$, $p < .01$).

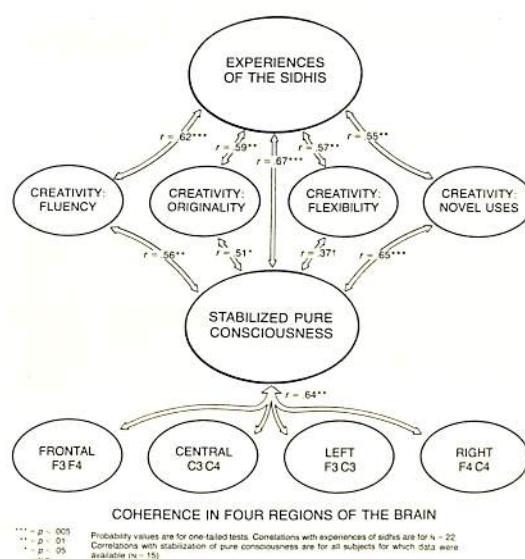
In addition, coherence in the four EEG frequency bands tended to be positively intercorrelated (r 's ranged from .5 to .7) indicating that coherence tends to develop in all frequency bands simultaneously.

Interpretation: The association of frequent experiences of the sidhis with high EEG coherence totalled across all of the brain regions studied and the lack of clear association between the experiences of the sidhis and any particular region of the brain suggests an extension of Lashley's Mass Action hypothesis to explain the results. In extending Lashley's theory it is hypothesized that a large amount of coherently interacting cerebral cortex is essential for such experiences to occur. Furthermore, the association of experiences of the sidhis with high coherence across a large proportion of the EEG spectrum suggests that coherence of the total EEG signal (or resonance) may be a necessary factor for the experience of the sidhis. The strong positive correlations among clarity of experience of pure awareness during the Transcendental Meditation technique, stabilization of pure awareness, and experiences of the sidhis indicates two possibilities: (1) that stabilization of pure awareness is a necessary condition for experiencing the sidhis and (2) that experiences of the sidhis stabilize pure awareness, leading to increased co-ordination of mind and body, the development of enlightenment.

Reference: David W. Orme-Johnson, Geoffrey Clements, Christopher T. Haynes, and Kheiriddine Badaoui, 'Higher States of Consciousness: EEG Coherence, Creativity, and Experiences of the Sidhis', MERU Report 7701, Centre for the Study of Higher States of Consciousness, Maharishi European Research University, Seelisberg, Switzerland, 1977. Abstract in *Scientific Research on the Transcendental Meditation Program: Collected Papers*, Vol. 1, MERU Press.

CHART P3

High Brain Wave Coherence, Stabilized Pure Awareness, Increased Creativity, and Experiences of the Sidhis



Finding: Positive correlations were found among total EEG coherence, stabilized pure awareness, number of experiences of the sidhis, and subscales of the Torrance Test of Creative Thinking (Verbal, Form A). All of the creativity subscales, frequency, originality, flexibility, and novel uses, were significantly correlated with number of experiences of the sidhis.

(EEG electrode placements were made according to the International 10-20 System.)

Interpretation: The Transcendental Meditation technique, through the progressive refinement of a thought, produces pure awareness, the state of least excitation of consciousness, which is accompanied by a minimization of metabolic activity (see charts A1-A11), an optimal balance of the biochemistry (B1-B4), stabilization of electrophysiological activity (F1-F4), brain wave synchrony (D3), interhemispheric correlation (D7), and coherence (D10).

Previous research has shown that the regular experience of pure awareness through the Transcendental Meditation technique develops all aspects of the mind (e.g. charts J1-J9), the body (G1-G8, H1-H5), and mind-body co-ordination (I1-I5). When this subtlest state of consciousness becomes stabilized, mind-body co-ordination becomes perfect, giving rise to greater creativity which extends to the supreme value of creativity, the experiences of the sidhis.

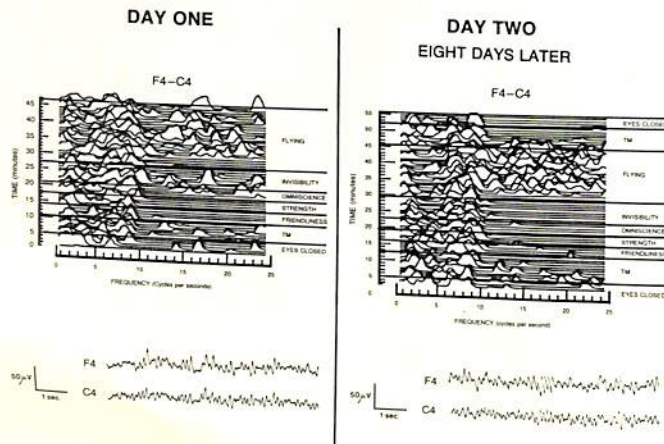
The high degree of correlation between experiences of the sidhis and ordinary forms of creativity suggests that they share common psychophysiological mechanisms and that the sidhis are only an extension of commonly experienced creative processes.

Reference: David W. Orme-Johnson, Geoffrey Clements, Christopher T. Haynes, and Kheiriddine Badaoui, 'Higher States of Consciousness: EEG Coherence, Creativity, and Experiences of the Sidhis', MERU Report 7701, Centre for the Study of Higher States of Consciousness, Maharishi European Research University, Seelisberg, Switzerland, 1977. Abstract in *Scientific Research on the Transcendental Meditation Program: Collected Papers*, Vol. 1, MERU Press.

CHART P4

Increased EEG Coherence during the Practice of the Flying Sidhi

Coherence Spectral Arrays



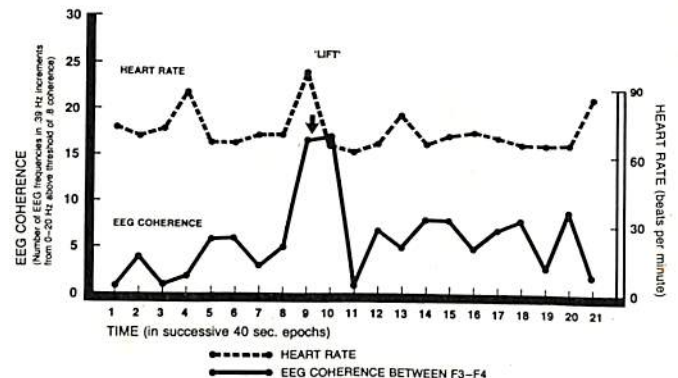
Finding: The EEG of ten participants in an Age of Enlightenment Governor Training Course was measured in the frontal, central, and occipital areas of the brain during a sequence consisting of the Transcendental Meditation technique and the sidhis on profound friendliness, supernormal strength, omniscience, invisibility, and flying, followed by a second period of the Transcendental Meditation technique. Subjective experiences were related to the amount of change in coherence, with increases in coherence being associated with experiences of settling into transcendental consciousness and decreases in coherence often being associated with the attention coming outward, usually to various physical sensations. The figure above shows consistent increases in EEG coherence for a subject during practice of the flying sidhi on two different sessions. Typical samples of the EEG taken from the tenth epoch (40 seconds per epoch) of the period of 'flying' shown below each coherence spectral array indicate that coherence increases seen during 'flying' were not due to artifacts.

Interpretation: The higher levels of coherence produced by the sidhis represent the development of a state of pure potentiality from which coupling of any or all cortical areas is possible. This would make a greater pool of cortical areas available for the processing and integration of information, accounting for the higher levels of performance produced by practising the sidhis, such as increased sensory acuity (chart P7), increased perceptual ability (chart P8), greater fluency and originality of creative processes (chart P9), greater intelligence (chart P10), and improved mind-body co-ordination (chart P11). The result of success in all the sidhis is the full development of consciousness and the perfect functioning of mind and body in the state of enlightenment.

Reference: David W. Orme-Johnson, Geoffrey Clements, Christopher T. Haynes, and Kheiriddine Badaoui, 'Higher States of Consciousness: EEG Coherence, Creativity, and Experiences of the Sidhis,' MERU Report 7701, Centre for the Study of Higher States of Consciousness, Maharishi European Research University, Seelisberg, Switzerland, 1977. Abstract in *Scientific Research on the Transcendental Meditation Program: Collected Papers*, Vol. 1, MERU Press.

CHART P5

High EEG Coherence and Heart Rate during an Experience of Levitation



Finding: This participant in an Age of Enlightenment Governor Training Course 'lifted' gradually two to three inches during the tenth second of the ninth epoch of the period of practice of the flying sidhi. It can be seen from the figure above that the 'lift' occurred during a period of high bilateral frontal EEG coherence which remained at a high level during the experience. During the time of the 'lift' the heart rate accelerated from 69 to 96 beats per minute. It can be seen in the figure that at other times there was generally a negative correlation between heart rate and coherence, lower heart rate corresponding to higher coherence.

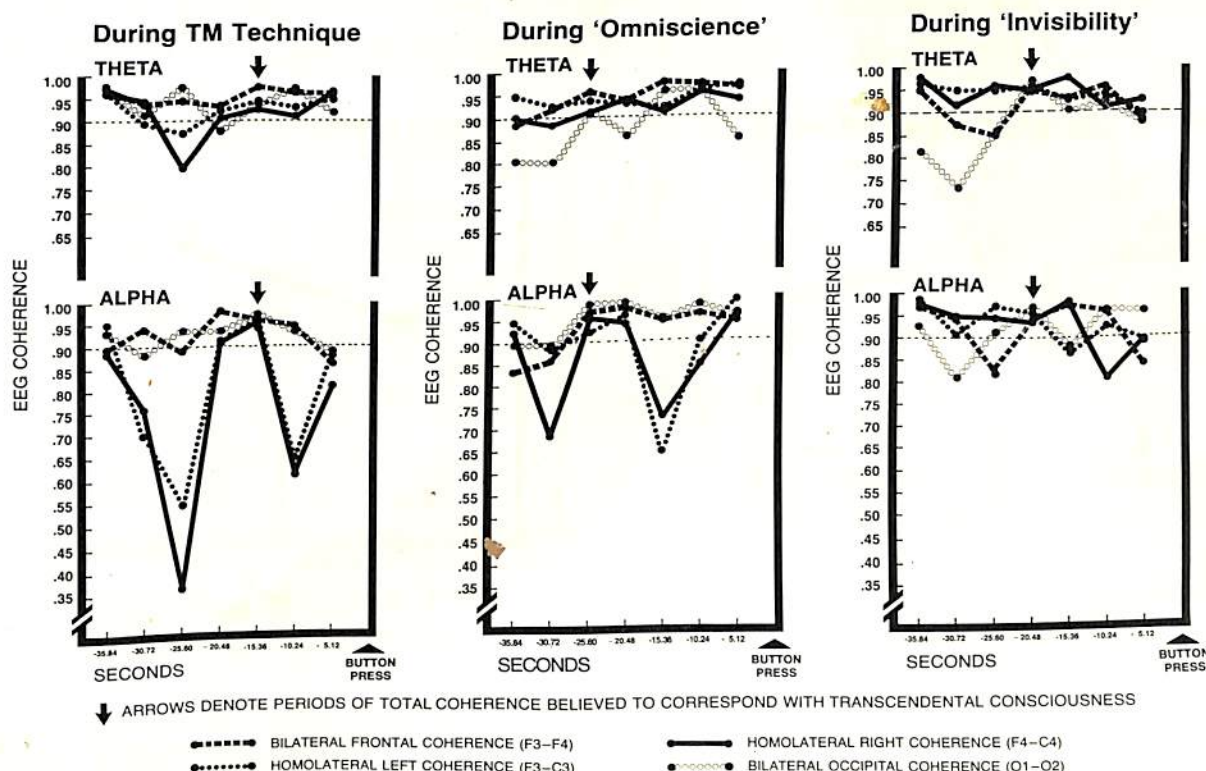
Interpretation: Observations such as this one show that increased integration of brain function is associated with specific experiences of the sidhis. The rise in heart rate during the experience of lifting probably reflects excitement and may indicate the emergence of a new style of physiological functioning in which a high level of activation can coexist with a high level of EEG coherence. This fits precisely with the definition of cosmic consciousness formulated by Maharishi. The negative correlation between heart rate and EEG coherence seen at other times reinforces previous indications that greater orderliness of central nervous system functioning is correlated with minimum metabolic activity during transcendental consciousness (chart A11). These physiological cycles of minimum metabolic activity and activation correspond to experiential cycles of unbounded awareness alternating with increased mental activity.

The subjective experience was described as 'much lightness as if I were being puffed up with *akasha* (space), the perception of the room and experience of gravity changed inside and outside.'

Reference: David W. Orme-Johnson, Geoffrey Clements, Christopher T. Haynes, and Kheiriddine Badaoui, 'Higher States of Consciousness: EEG Coherence, Creativity, and Experiences of the Sidhis,' MERU Report 7701, Centre for the Study of Higher States of Consciousness, Maharishi European Research University, Seelisberg, Switzerland, 1977. Abstract in *Scientific Research on the Transcendental Meditation Program: Collected Papers*, Vol. 1, MERU Press.

CHART P6

Coherence Cycles of the Brain during the Practice of the Sidhis



Finding: A detailed analysis of EEG coherence during the sidhi on 'flying' in five participants in an Age of Enlightenment Governor Training Course showed that total coherence (all frequencies and all derivations) fluctuates in cycles between high and low values, high values preceding periods of hops of two to three feet and one to two feet off the ground while sitting cross-legged, a preliminary stage of levitation (also see chart P5).

In order to obtain a closer estimate of the relationship between coherence changes and subjective experiences, a subject was asked to press a button after a clear experience of each sidhi. The order of techniques was (a) several minutes of the Transcendental Meditation technique, (b) the sidhis on profound friendliness, supernormal strength, omniscience, invisibility, flying, and (c) the TM technique. The subject described the sequence of experiences that commonly prompted the button pushes as a cycle: first an abstract experience of pure consciousness, then five to ten seconds of some physical experience of great pleasure associated with the experiences of the sidhis (the subject reported that 'the stirring of abstract pure consciousness brings bliss which was more of a physical sensation'), then the thought to press the button.

Twelve out of the thirteen button presses were preceded by coherence in excess of .9 simultaneously in all brain areas in the alpha and/or theta frequencies (coherence ranges from 0 to 1.0). Total coherence (high coherence in all areas) occurred 10 seconds before pressing the button 80% of the time for theta and 50% of the time for alpha. At other times it occurred from 5 to 25 seconds before pressing the button. Periods of total coherence were cor-

related with slow respiration and stable skin resistance. Periods of lower coherence were correlated with physiological activation—unstable skin resistance responses and occasionally variability in the respiration.

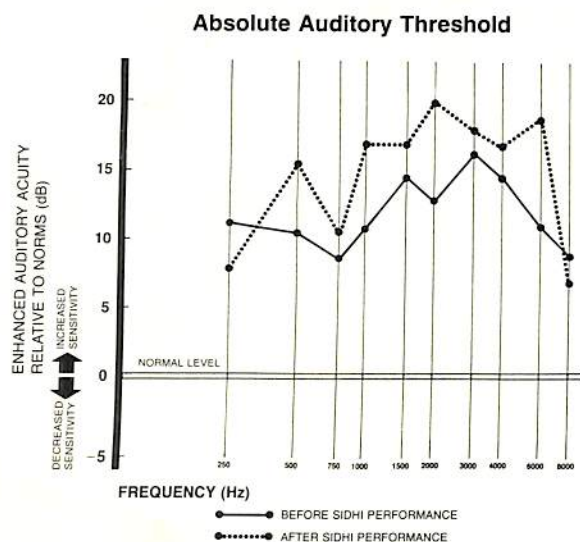
Interpretation: Experiments on EEG coherence have established that high coherence reflects the functional integration of the brain and suggests that attentional processes have an integrating effect on neuronal populations. High total EEG coherence would mean attention everywhere—unbounded awareness; total coherence at the physiological level corresponds with unbounded awareness at the level of consciousness (also see charts A11, P1, P2).

The dynamical changes seen in the EEG during the sidhis show that the sidhis 'exercise' the physiology to work in total co-ordination, activity always arising from and returning to total coherence, the state of least excitation and perfect orderliness of the nervous system, thus developing perfect mind-body co-ordination in the state of enlightenment (also see charts P7-P11).

The subjective reports were 'a sparkling feeling, like a diamond', 'light pouring out into the environment', 'smoothness and calmness, lots of energy up the spine', 'feeling of fading into another level of creation . . . the body becomes another substance which becomes invisible'.

Reference: David W. Orme-Johnson, Geoffrey Clements, Christopher T. Haynes, and Kheirredine Badaoui, 'Higher States of Consciousness: EEG Coherence, Creativity, and Experiences of the Sidhis,' MERU Report 7701, Centre for the Study of Higher States of Consciousness, Maharishi European Research University, Seelisberg, Switzerland, 1977. Abstract in *Scientific Research on the Transcendental Meditation Program: Collected Papers*, Vol. 1, MERU Press.

CHART P7

Enhanced Hearing Ability
from Practice of the Sidhis

Finding: In a pilot study the absolute threshold of hearing at frequencies from 250 Hz to 8000 Hz was determined using a standard von Bekesy technique for eight female students (ages 23–30) participating in an advanced Age of Enlightenment Governor Training Course at MERU; the determination being made before and also after 15 minuteing the sidhi 'supernormal power of hearing'. In the initial measurement the subjects displayed hearing thresholds unusually sensitive even for healthy young adults (11.7 dB more sensitive than norms averaged over all frequencies). After the sidhi performance, the hearing of the subjects became even more acute by a further 3.0 decibels ($p < 0.1$, two-tailed t -test).

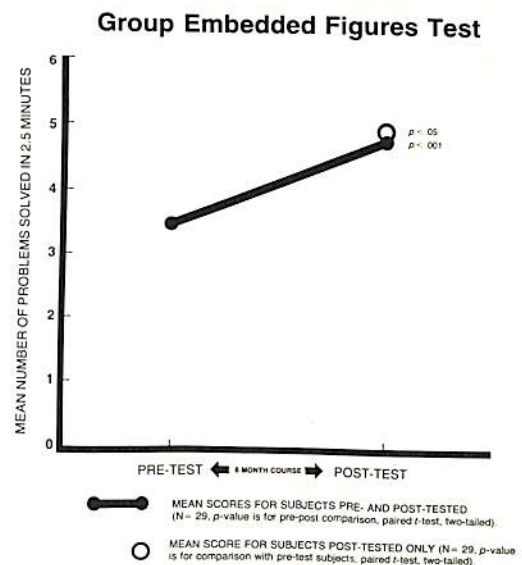
Interpretation: The unusually sensitive hearing thresholds measured in this study demonstrate the remarkable developments in physiological performance taking place in participants in advanced courses in the TM programme.

The short-term improvement in hearing, which approached significance even in this pilot study of eight subjects, occurring after 15 minutes of performing the sidhi 'supernormal power of hearing', confirms the effectiveness of these procedures to develop fully one aspect of mind-body co-ordination. The base-line measure, showing the stability of the enhancement of auditory thresholds in the subjects of this study, indicates the cumulative benefit of the Age of Enlightenment Governor Training Course and the TM programme in general.

Current theories of audition suggest that such improvements in hearing—particularly short-term improvements—are centrally mediated, occurring as a result of an improvement in the processing of the incoming signal. These results therefore reflect the integration of neurophysiological functioning found as a result of the TM programme, and may be closely related to the high EEG coherence found during the technique (charts D10–12, P1–P6).

Reference: Geoffrey Clements and Stephen L. Milstein, 'Auditory Thresholds in Advanced Participants in the Transcendental Meditation Programme', MERU Report 7702. Psychology Laboratory, Centre for the Study of Higher States of Consciousness, Maharishi European Research University, Seelisberg, Switzerland, 1977. Abstract in *Scientific Research on the Transcendental Meditation Program: Collected Papers*, Vol. 1, MERU Press.

CHART P8

Broad Comprehension and Improved Ability
to Focus Attention Resulting from the Age
of Enlightenment Governor Training Course

Finding: The Embedded Figures Test (EFT) is a perceptual test designed to measure the ability to locate a simple figure embedded in a perceptually complex field. Twenty-nine subjects given different forms of the test at the beginning and end of the Age of Enlightenment Governor Training Course were found to improve significantly on the EFT. During the course the subjects learned to practise the sidhis or supernormal powers (see chart P2). A second group of 29 course participants given the same form of the test as the pre-test subjects and matched with them on age, education level, years practising the Transcendental Meditation technique, and years teaching the Transcendental Meditation programme were tested for the first time at the end of the course. They also scored significantly higher than the pre-test group, showing that the improved performance was not due to familiarity with the test (see figure above).

The average scores of the two groups at the end of the course were 107 and 109 per cent greater than the maximum speed the test was designed to detect (the test had to be given in half the usual time to eliminate a 'ceiling' effect). Seventeen per cent of the subjects solved the problems in 200 per cent of the maximum speed the test was designed to detect (9 problems in 2.5 minutes).

Interpretation: Research on the Embedded Figures Test shows that high scores reflect a deep-seated potential to discover and utilize more resources to solve problems, a reliance on one's own internal frame of reference in comprehending perceptual and social situations, and greater creativity.

The practice of the sidhis is through a process technically called *sanyama*, in the *Yoga Sutras* of Patanjali (also see chart P2). *Sanyama* describes the process of perceiving the object of focused attention as it merges with unbounded awareness. This process enlivens the ability for the finest levels of focal discrimination while simultaneously maintaining unbounded awareness.

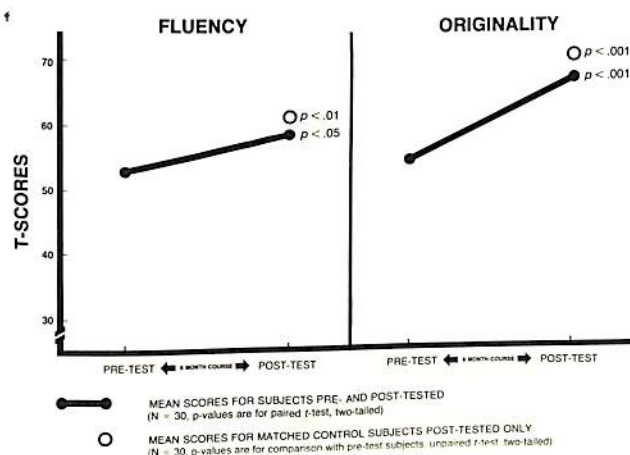
Through this most basic of all psychological processes the two extreme values of perceptual and cognitive style come to coexist; fine discrimination characteristic of psychological differentiation or Field Independence becomes integrated with a global perspective characteristic of Field Dependence.

Reference: David W. Orme-Johnson, Barbara Grameri, 'The Effects of the Age of Enlightenment Governor Training Courses on Field Independence, Creativity, Intelligence, and Behavioural Flexibility', Centre for the Study of Higher States of Consciousness, Maharishi European Research University, Seelisberg, Switzerland, 1977. Abstract in *Scientific Research on the Transcendental Meditation Program: Collected Papers*, Vol. 1, MERU Press.

CHART P9

Increased Visuo-Spatial Creativity Resulting from the Age of Enlightenment Governor Training Courses

Torrance Figural Test of Creative Thinking



Finding: Sixty subjects were given the figural form of the Torrance Test of Creative Thinking which measures visuo-spatial creativity. Thirty were tested on different forms of the test at the beginning and at the end of an Age of Enlightenment Governor Training Course during which they learned to practise the sidhis (supernormal powers, see chart P2). A matched group of thirty course participants was tested only at the end of the course. Both groups did better after the course than the group tested before the course on (a) Fluency (the frequency of creative ideas) and (b) Originality (the ability to visualize imaginative ideas), indicating that increased creativity results from participating in the course and is not due to familiarity with the test.

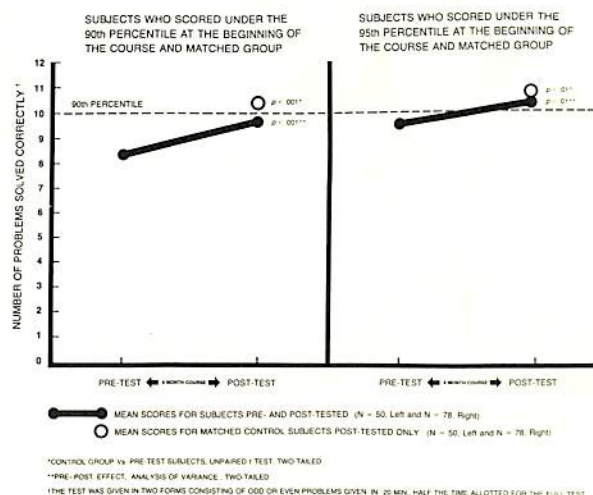
Interpretation: Psychologists have found that creativity is the product of the whole man, coming out of the silence of his being and the integration of his physiology, which has recently been found to be correlated with high EEG coherence (charts D11, P3). The sidhis are the expressions of a supreme level of creativity: the experiences of consciousness as a field of all possibilities. On the infinitely silent and maximally integrated level of the state of least excitation of consciousness (chart A11) man becomes the master of the forces of creation (charts P2–P6). The enlivenment of this value is expressed in the results of the present experiment.

Reference: David W. Orme-Johnson, Barbara Granieri, 'The Effects of the Age of Enlightenment Governor Training Courses on Field Independence, Creativity, Intelligence, and Behavioural Flexibility.' Centre for the Study of Higher States of Consciousness, Maharishi European Research University, Seelisberg, Switzerland, 1977. Abstract in *Scientific Research on the Transcendental Meditation Program: Collected Papers*, Vol. 1, MERU Press.

CHART P10

Increased Intelligence Resulting from the Age of Enlightenment Governor Training Courses

Raven Advanced Progressive Matrices



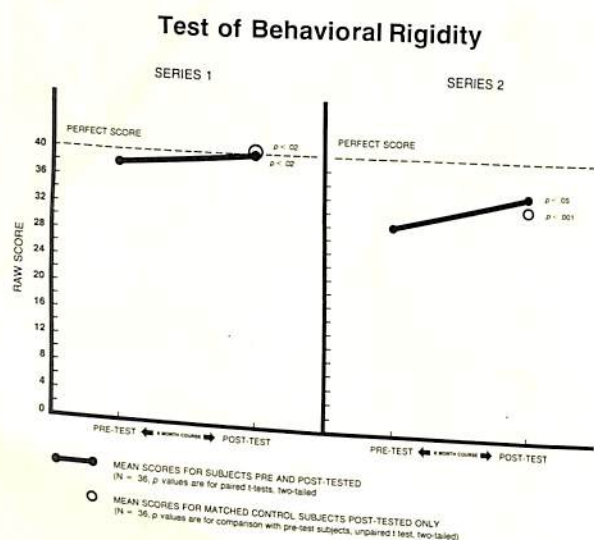
Finding: The Raven Progressive Matrices measure the potential for deductive reasoning, assimilation of large amounts of information and convergence on a single correct solution, as is commonly used in mathematics and science. Of the 130 subjects tested at the beginning of the Age of Enlightenment Governor Training Course, 40% scored over the 95th percentile for adults and 61% over the 90th percentile. In order to eliminate a ceiling effect, only subjects initially scoring under the 90th and 95th percentile were analysed for a longitudinal change. These subjects (N = 50 and N = 78 respectively) increased significantly on intelligence when retested on a different form of the test at the end of the course. Two groups (N = 50 and N = 78) matched with the first ones on age, education, length of time meditating and years teaching the TM programme, were tested for the first time at the end of the course. They also scored significantly better than subjects at pretesting, showing that the increased intelligence after the course could not be accounted for by familiarity with the test.

Interpretation: Two basic types of thinking are enhanced by the Age of Enlightenment Governor Training Course in which participants learn and practise the sidhis: (1) increased divergent thinking, the ability to generate a diversity of new and appropriate ideas, is demonstrated by increased creativity (chart P9); (2) increased convergent thinking, the ability to arrive at the correct solution through logical deduction, is shown by increased intelligence in the present experiment.

The universal prototype of these two types of thinking is the process of sanyama described in the *Yoga Sutras* of Patanjali by which the sidhis are achieved (also see chart P8). During sanyama a thought is perceived as converging on its universal value, transcendental consciousness, from where the divergent and striking effects of the sidhis arise. The practice of the sidhis engenders in the mind and physiology a deep and generalized habit of 'converging' and 'diverging' that is transferable to any specific situation. Having mastered sanyama, the student has gained the goal of all educational systems, unlimited creativity and intelligence.

Reference: David W. Orme-Johnson, Barbara Granieri, 'The Effects of the Age of Enlightenment Governor Training Courses on Field Independence, Creativity, Intelligence, and Behavioural Flexibility.' Centre for the Study of Higher States of Consciousness, Maharishi European Research University, Seelisberg, Switzerland, 1977. Abstract in *Scientific Research on the Transcendental Meditation Program: Collected Papers*, Vol. 1, MERU Press.

CHART P11

Increased Mind-Body Co-ordination
Resulting from the Age of Enlightenment
Governor Training Courses

Finding: The Test of Behavioral Rigidity measures the degree of flexibility of cognitive and motor behaviour by testing the rate of correctly producing familiar responses under time pressure. Participants in an Age of Enlightenment Governor Training Course tested at the beginning and end of the course were found to increase significantly on two tests of psychomotor speed, the rate of thinking and of writing antonyms (series 1) and synonyms (series 2). A matched control group of course participants tested for the first time at the end of the course also scored significantly higher than the subjects tested at the beginning of the course, demonstrating that familiarity with the test could not account for the improvement. The mean score in series 1 for the subjects at the end of the course was virtually the maximum speed possible on the test.

Interpretation: This experiment indicates that increased mind-body co-ordination needed to make accurate psychomotor responses under time pressure is cultured through the Age of Enlightenment Governor Training Courses.

Psychologists have found that overly high or overly low motivation impairs performance, too high motivation resulting in inflexible, stereotyped and/or inappropriate thinking and behaviour, too low motivation resulting in low-grade performance.

According to Maharishi, rising cosmic consciousness is accompanied by a growing evenness and inner stability as transcendental consciousness is stabilized in activity. This frees the individual from excessive motivational pressures that impair performance. The high levels of performance recorded in this experiment reflect the development of more perfect mind-body co-ordination in which the intentions of a stable mind are fully supported by a healthy flexible physiology.

Reference: David W. Orme-Johnson, Barbara Granieri, "The Effects of the Age of Enlightenment Governor Training Courses on Field Independence, Creativity, Intelligence, and Behavioural Flexibility" Centre for the Study of Higher States of Consciousness, Maharishi European Research University, Seelersberg, Switzerland, 1977 Abstract in *Scientific Research in the Transcendental Meditation Program, Collected Papers, Vol. 1*, MERU Press.

Conclusion

These experiments on the TM-sidhi programme add a new dimension to the scientific research on the Transcendental Meditation programme. They establish that experiences of the sidhis have their basis in a high level of orderliness of neurophysiological functioning and that the practice of the sidhis over a few months improves basic perceptual, intellectual, creative and psychomotor abilities; this being in direct parallel to the subjective experiences of increasing intuition, happiness, and freedom from limitations.

Whereas the TM technique enables the individual to contact the field of all possibilities found in the simplest form of awareness, the TM-sidhi procedures enliven the field of all possibilities and allow all possibilities to be expressed in every phase of activity.

This is the fulfilment of the goal of every system of education; to produce enlightened individuals fulfilled within themselves and able to express this fulfilment to ensure progress and achievement in their every undertaking.

*I*t should be within the ability of the educational system of every country not only to preserve but also to strengthen the cultural values of the nation while promoting maximum progress. It must be obvious to educators in all parts of the world that the influence of cultural values in every country is on the decline. The fast means of global communication and growing friendship among nations are inter-mixing cultural values and diluting the uniqueness of every culture.

It is beyond the ability of the proud custodians of any culture today to resist the influence of other cultures, for this would also mean resisting progress. It will be wise to transform this situation into a means for strengthening the cultural values of every country and at the same time ensuring all progress everywhere.

The Science of Creative Intelligence offers that knowledge and experience which develop creativity, stability, adaptability, integration, purification, and growth. The individual members of every society, growing in these qualities, will naturally become stabilized in their own cultural values, and at the same time, remaining adaptable, will be able to welcome any outside influence, purify it, and integrate the best of it into their own culture, thereby allowing the fuller expression of cultural values in the life of the nation. This is so vitally important, particularly in the education of the growing youth of every culture.

If the members of society do not grow in these six values they will always be swayed by outside influences, the cultural values will always be threatened, and society will always remain incapable of deriving maximum benefit from the outside world. It is only fully developed individuals who can secure for themselves and their society the blessings of living life in fullness. The introduction of the Science of Creative Intelligence at all levels of education in every country will ensure the safety, the security, the growing strength of cultural values, and the progress that are so dear to the spirit of education in every culture.

—Maharishi



The research and conference activities of Maharishi European Research University focus on the following eight areas. In each area the potential application of the full development of consciousness is being investigated.

1. Ageing and Immortality

An investigation into the causes of ageing and into the role that fully developed consciousness plays in promoting longevity.

2. Health

Research into the causes of illness and the means of preventing all forms of illness by increasing the general level of health and resistance to disease in all members of society.

3. Education

Research into educational methods to produce fully developed citizens, free from weakness and capable of creating an ideal society, to make the learning process fulfilling, and to develop the full creative potential of every student.

4. Crime

Research into the means of prevention of criminal behaviour and the rehabilitation of criminals through the expansion of human awareness and the promotion of integrated and harmonious behaviour in society.

5. Industrial Development

An investigation into the causes of low productivity, industrial unrest, and imbalances between industrial development and ecological considerations and into the solutions to these problems; 1) through the development of individual creativity and 2) through the development of a more integrated awareness of the balances among natural phenomena in the environment.

6. Agriculture

An investigation into agricultural problems, such as the causes of famines, and into the means for the prevention of such problems through the restoration and maintenance of balance in nature.

7. Cultural Integrity

Research into the causes of the rise and fall of civilizations, and the development of techniques to promote cultural integrity and global progress.

8. World Consciousness

An investigation of the mechanics of producing growth in world consciousness, and the development of means of measuring and promoting such growth.

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